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PART I.

ORIGINAL COMMUNICATIONS.

ART. XI.—*The Cerebro-spinal Symptomatology of Worms, especially Tape-worms.* By THOMAS P. HESLOP, M. D., late Senior Physician to the Queen's Hospital, and Professor of the Practice of Physic, Queen's College, Birmingham.

THERE is, certainly, no disease of equal frequency and equal importance with vermination, the symptomatology of which in the human subject is less understood. The natural history of parasites, both as regards entozoa and ectozoa, has greatly advanced of late days. The relations of the cystoid and cestoid entozoa to each other, in different species of animals, and at different periods of their evolution, have been worked out with a success which seems to leave but little for the future investigator in a branch of natural science hitherto a puzzle to the philosopher, and a stumbling-block to the theologian. Just as we have arrived at more exact knowledge about the cause of the disorder vulgarly termed "worms," so have we become greatly aided by the traveller in our efforts to cope with the malady. We have far more numerous and effective instruments for obtaining the expulsion of these parasites than were known to scientific medicine among our forefathers. Hence the natural history of the disease, so far as the specific

determining cause is concerned, and empirical therapeutics have greatly advanced, though with unequal steps, while the intervening parts of the history have not only not advanced, but very manifestly retrograded from the point at which they had arrived before the epoch of modern rational medicine. Vermination does not offer the only instance in our times of a forgetfulness of the general relations and vital reactions of diseases, and a too exclusive absorption of the attention upon certain so-called "physical" signs and etiological subtleties. The result is, that even experienced and acute observers have waited for the appearance of a worm in the clothes or the evacuations of the patient, before they have had a suspicion of the real nature of certain grave and remarkable associated symptoms, for whose relief they had been consulted. Yet, these symptoms are so uniform, their physiognomy so striking, their peculiarities so nearly pathognomonic, that they become veritable signs—almost certain indices—of their causation, when scrutinized by a well-instructed physician. These observavations will appear still more worthy of consideration if we reflect that the symptoms belong to a disorder which does not appear to tend naturally to a termination—the tendency to reproduction, and, consequently, to permanence, being a very plain character of the affection, even, probably, under such improved conditions as might have prevented the development of the worms, had they existed at the beginning. We have, moreover, an additional incentive to take every care, in order to effect a correct diagnosis, insomuch as that being once arrived at, the complete restoration of the patient from all his troubles may be fairly predicted as the result of our efforts.

In these observations I particularly allude to the verminous affections of the adult, for it would scarcely be consistent with experience to state that they do not occupy a sufficient place in the minds of the medical attendants when treating infantile disorders. The contrary is, indeed, the case, for the tendency here is rather to exaggerate their frequency and importance than to diminish them—rather to seek in worms a solution of all difficulties, than to forget their existence.

I have thought it desirable to place a series of cases before the reader, so that the general nature of the symptoms produced by them may be well studied, previous to offering a view of the present knowledge of the subject and of my own opinions. It will be observed that the special object of this Paper is to illustrate the aberrations of function appertaining to the nervous system; and, though many of the cases will contain allusions to other branches of semeiology, yet, as those

particular deviations from the healthy state have occupied my chief attention, owing to the want of their appreciation on the part of the great majority of modern writers, the bulk of the reports will be limited to their description.

The number of these cases will, doubtless, surprise those living in localities where tape-worm constitutes a very rare disease in man. Let me at once state that in this town it is common to a degree that never fails to produce astonishment in the minds of strangers. I am not in a position to give an opinion upon the origin of this frequency, but the fact is unquestionable. I only here give an abstract of an inconsiderable fraction of the whole number of cases which have been under my observation during the past ten years; but they will be, probably, deemed sufficient to warrant positive conclusions in reference to the object of this essay.

Case I.—Anne Boswell, aged 43, married, admitted a patient of the Birmingham General Dispensary, October 20, 1853. Has had fourteen children Complexion florid; looks robust. States that, when young, she was very hysterical. As a rule, she has meat twice a week; her dinner ordinarily consists of bread, potatoes, and occasionally of cabbage. For the last two years she has passed almost daily pieces of tape-worm, but does not believe she ever suffered from worms previously. During this period she has suffered intensely from occipital and frontal cephalalgia and from giddiness. Sleeps badly, from the pain in the head. States that she feels "stupified," and staggers as she goes along the street; and, even in moving about the house, is often compelled to lay hold of objects for the purpose of steadying herself. During the attacks of giddiness, which are often associated with feelings of faintness, her sight seems to leave her, and she experiences sensations as of webs before her eyes; she has likewise frequent tinnitus aurium, and suffers greatly from tremors in the arms and a general feeling of weakness. Bowels generally open once a day; passes a large quantity of pale urine. Ordered kousso, with tonics and salines.

October 24th. An hour and a half after taking the kousso she began to pass some pieces of tape-worm, varying in length from separate joints to several yards. She brought me a half-pint bottle half filled with the parasite, and stated that she had passed three times as much. The expulsion of portions of worm lasted for twenty-four hours, when it quite ceased. Her head feels lighter, sight clearer, giddiness and tremors less; pulse about 80, soft and small; skin perspiring.

27th. Has seen no worms since; giddiness diminished;

tremors less, but complains of the headach being as bad as ever. Scarcely sleeps at all at night. Ordered a turpentine draught.

31st. Giddiness less; tremors much better, but the cephalalgia is as bad as ever; sleeps very badly; vision as before; nothing stated of further expulsion of worms. Ordered ammonia, bicarbonate of soda, tincture of hop, and infusion of calumba.

Case II.—Mary Butler, aged 39, applied to the Dispensary, October 24, 1853. Has had three children. States that she first began to suffer from tape-worm six or seven years ago, and, during this period, has almost constantly passed pieces of flat worm with her motions. She sometimes suffers from pain in the stomach, but rarely vomits; no thirst or epigastric tenderness; appetite bad; bowels open daily; tongue clean, fissured in the centre; pulse about 74, soft; skin perspiring; catamenia regular and profuse.

Her chief complaint, for which she has applied to the charity, is intense headach, pretty generally diffused over the head, and which is accompanied by a sense of beating; suffers from extreme giddiness, so that she is constantly obliged to sit down; eyesight occasionally leaves her. Ordered a draught of turpentine and castor-oil, and a mixture of sal volatile, compound tincture of bark, and infusion of cascarilla.

October 27th. States that the turpentine made her feel very ill and sick, but soon after taking it she began to pass large quantities of tape-worm, for the most part in single joints, but some pieces extending to one or two feet. The draught operated twice, the second motion being about an hour after it had been taken. Giddiness less; cephalalgia much better.

31st. Giddiness and tremblings less; sight much better; pain in the head, until yesterday, much better, when it returned, and continued until this morning; bowels open every day. The kousso was now ordered, but no further report of the case appears.

Case III.—Jane Fox, aged 38, married, has had seven children. Four years ago first passed worms, and almost continuously since that time. The bowels have usually been very costive. The same month that she first noticed the worms she suffered from fits, in which she struggled and lost her consciousness; she had several fits, one after another, but never since. Has suffered constantly from heaviness and pain in the head, and always felt a tendency to sleep during the day. Has experienced great giddiness and general tremors; taste indifferent; smell vanished; sight impaired. All these symptoms

appear to have come on about the same time. Catamenia regular, but scanty. Has taken much medicine for her symptoms, but without the slightest relief. Her attendants do not appear to have treated her for the worms, with the exception of one physician, who administered a dose of turpentine, with the effect of bringing away some flat worm. Has suffered much from indigestion and flatulence. Ordered potash solution, rhubarb, and quassia infusion, and a colocynth pill with hyoscyamus every night and morning.

21st. Ordered kousso and an alkaline tonic mixture.

28th. It is reported that the kousso operated, but there are no further details of the case.

Case IV.—E. G., a married woman, about thirty-five years of age, sent to me by Mr. Sharman, labouring under flatulent distention of abdomen, simulating pregnancy, for which she had long been anxious. The headach and giddiness were strongly pronounced, together with hypochondriasis and hysterical tremblings; face extremely pale; catamenial function irregular. She had long passed pieces of tape-worm. Anthelmintics were prescribed, and partial relief followed.

Case V.—S. D., aged 27, single, applied to the Dispensary in May, 1854. Complained seven years ago of violent pain in the forehead, extending underneath and around the eye, the pain coming on about 8 o'clock in the morning, and lasting until 1 o'clock. This state continued for a fortnight, when she had a fit, for which she was bled. She was at this time subject to giddiness and dimness of vision. Previous to this period she had suffered occasionally for several years from fainting fits. After twelve months she had a return of the giddiness, dimness of vision, singing in the ears, but never had a return of the fit. Declares that during the last seven years she has had about twenty distinct attacks, similar to those described, and has been bled five times. Thinks she has fainted forty times. States that she has passed worms constantly for twelve months. On application, her chief complaints are giddiness and violent pain in the left side of the head, lasting all the morning; catamenia regular.

Kousso ordered, with the effect of bringing away, in two hours and three-quarters, a large quantity of flat and round worms. A dose of castor-oil was administered, which brought away more flat worms in large quantity.

Case VI.—A. S., aged 32, has had three children, and two miscarriages. Applied April 25, 1854, complaining of fits, the first of which had been followed by the loss of the use of the right upper and lower extremity. This she gradually re-

covered, but has been subject to giddiness, impaired vision, and headach. These symptoms being strongly marked, she was ordered, May 25, a draught of turpentine and castor-oil, after taking which, detached pieces of tape-worm were evacuated.

June 1st. States that the head symptoms are relieved, though she is occasionally subject to them. Has not had a fit since the worms were passed.

Case VII.—H. T., aged 26, applied to the dispensary, April 18, 1854, labouring under menorrhagia. She has had one child, and had five miscarriages.

May 1st. Complains of violent pains in the abdomen and back, headach, noises in the ears, and impaired vision. Ordered kousso, three drachms. It did not evacuate pieces of tape-worm until next day, when "a quantity" was passed.

29th. Head symptoms have reappeared. Ordered a turpentine and castor-oil draught, which was vomited. No more worms have passed.

June 1st. Has pains in all her limbs, headach, giddiness, but is free from noises in the ears or faintings. Sight unaffected.

I shall now give a collection of cases which have occurred to me in the Queen's Hospital, and first I shall present those which have applied as out-patients. These will be merely condensed summaries of the facts, such as are necessarily taken under these circumstances.

Case VIII.—M. F., aged 8; October 29, 1852. Is daily troubled with worms; said to be "small white worms." Suffers every day with pain in the head. No tenderness over abdomen, or cough.

Case IX.—E. F., aged 39; March 9, 1853. Suffers from pain in the head, and occasionally feels giddy. Has felt low for some weeks. Bowels regular; appetite bad; has had five children; for the last month she has suffered from tape-worm.

Case X.—S. C., aged 7, a boy; November 6, 1853. Was an out-patient some time ago with pertussis. He is now suffering from pain in the head, cough, debility, and tenderness of the abdomen. Bowels confined; voids long, round worms.

Case XI.—J. L., aged 18, a man; February 5, 1853. Has passed thread-worms for two or three years, and has had itching about the anus. Ordered an aloetic purgative.

19th. Has passed some ascarides. Bowels confined; ordered turpentine and castor-oil.

23rd Has passed a quantity of flat worms.

26th. Still passes worms; feels giddy, and complains of headach and heaviness over the eyes. Ordered another draught of turpentine.

March 5th. Is much improved, and has seen no more worms.

Case XII.—E. C., aged 14, a girl; February 19, 1853. Complains of much pain in the abdomen, also during and after micturition. Bowels confined; never had fits; talks in her sleep. Ordered a purgative with steel.

23rd. Has passed a large quantity of lumbrici since last visit. She passsd tape-worm when about six years old.

26th. Is much better; has passed no more worms. Later reports state that the pains in the head and giddiness are better, though these symptoms had not previously been mentioned. Worms were not again passed.

Case XIII.—H. S., aged 47, a married woman; March 26, 1853. Has been subject to fits for two or three years. Has generally had them once a fortnight, and since they have appeared, has been subject to lumbrici and ascarides. Is troubled with frontal headach and dimness of vision; thirst; no pain after eating. She does not appear to have passed worms during the last three days. Powerful purgatives and turpentine failed to bring away worms, but much relieved all her symptoms, although a fit is reported to have taken place on the 15th of April.

Case XIV.—A. G., aged 32; March 14, 1853; a woman. Applied for relief of palpitations, pain in the head, and leucorrhœa. Is very anemic, and has suffered for a long time from night-sweats. Has had one child, nine years ago.

30th. On this day she was ordered a terebinthinate draught, in consequence of her statement that ten days previously she had passed some flat worms in pieces, which were also passed after taking it. It appears that two years ago she had two fits, three weeks intervening between them. About nine days after the second fit, she passed a flat worm, nearly, as she states, twenty yards long. She experienced on Sunday last similar symptoms to those she had previously felt before the fits came on: namely, numbness in the legs and arms, momentary forgetfulness, and cephalalgia. The effects of the remedies have been highly satisfactory. The cephalalgia and vertigo are greatly relieved, and she feels no numbness. Tongue clean; skin moist; pulse regular; leucorrhœa diminished. Ordered another draught.

April 6th. Much better.

May 11th. Discharge less; giddiness less; and is altogether better.

Case XV.—S. H., aged 38, married; April 13, 1853. Complains of pain in the side and bowels, which are confined, and of vomiting almost immediately after taking food. Passes flat worms every day. Ordered a turpentine and castor-oil draught.

May 18th. The draught was thrown up, and produced no other effect. Has had giddiness during the last few days. Never had fits; no tinnitus aurium. She says the pain is now on the right side; pulse feeble; tongue clean, tremulous; urine abundant. She has passed worms for about five years. Ordered three drachms of kousso.

21st. A great quantity of tænia has come away, and she has not experienced the giddiness at all until this morning.

25th. No giddiness; has passed more worms; still complains of pain in the right side.

June 15th. Has passed no more worms.

Case XVI.—E. W., aged 30, servant; April 23, 1853. Suffers from pain in the head, across the brows, tinnitus aurium, and giddiness. Does not vomit often, but feels occasional nausea, and has suffered from flatulence for six months. Menstruation regular; griping pain in the bowels, which are confined; never had fits; has passed flat worms for twelve months. Ordered a turpentine draught with castor-oil, and a mixture of sulphate and bi-carbonate of magnesia, with tincture of hyoscyamus and quassia infusion.

27th. The draught brought away "a very short worm;" bowels are open; she feels better.

30th. Feels improved and stronger; no more worms.

May 11th. Is much better.

Case XVII.—D. S., aged 42, a bailiff. Has had pain in the back and lower limbs for two weeks. Lost the use of his legs for about two days, with prickling pains in them; no numbness. He got wet about three weeks since. He says he had a similar attack about four years ago. He has worms which come away from him very often. The pains are worse at night. Ordered iodide of potassium, and rhubarb pill. It is to be regretted that this interesting case is incomplete.

Case XVIII.—C. L., aged 40; May 28, 1853. Has had five children; menstruation regular; is so nervous that she cannot go from home without some one accompanying her. Complains of pain in the back of the head, and of burning pain in the abdomen. Has occasionally passed "little thread worms."

June 4th. Evacuated some round worms last week; has pain in the stomach.

Case XIX.—S. A. F., aged 8; June 29, 1853. She is suffering from chorea on both sides of the body; has passed pieces of flat worm, and has lost flesh lately. There is a marked systolic bruit.

Case XX.—S. A., aged 29; November 11, 1853. Has been labouring for six months from intense dyspnœa, particularly in the morning and evening. Is constantly suffering from profuse catamenial discharges. Had a sensation of rising in the throat a few days ago, and a fit at the same time; bowels generally confined; she breathes apparently with extreme difficulty, and at every inspiration there is a wheezing noise in the throat, but no morbid phenomena are observable in the chest. States that she has spat much.

December 2. Breath better; still expectoration. Fourteen days since she first began to pass tape-worm; yesterday, more in large quantity; constant giddiness in the morning; states that it is two years since the fits first seized her. Ordered kousso and castor-oil.

9th. Two hours after taking the kousso, the bowels began to be moved, and she passed some joints of flat worm and small round worms; headach better.

16th. Has passed round worms and been sick. She had a fit on the 13th, ordered a turpentine and oil-draught.

23rd. Passed worms yesterday; nothing stated of the operation of the turpentine; but to-day ordered kousso three drachms; and sulphate of zinc, sulphate of magnesia, and calumba infusion.

30th. Severe pain in the head; giddiness; great dyspnœa; sleeps badly; bowels open; tongue morbidly red; kousso brought away many pieces of worms, which have also come away every day since.

January 6th. Passed some tape-worm yesterday.

February 10th. Has reapplied, labouring under oppression at the chest, and has had one fit during the last month. Bowels much relaxed; catamenia regular. Yesterday, passed some round worms. Ordered steel and quassia.

February 21. Passed a quantity of tænia yesterday, but not so many as after taking the kousso.

March 10th. Has not passed any worms lately; has pain and giddiness occasionally in the head.

17th. Has passed worms, and had fits since last visit.

24th. Has giddiness; has just had a fainting-fit. Passed

worms a few days ago. Ordered oil of male fern, and castor-oil.

31st. Began to pass worms on the afternoon of the 25th, on which day she took the oil, and on the three following days. Head is better.

Case XXI.—S. P., aged 16, of nervo-lymphatic temperament; November 22, 1853. She had been an in-patient early in October last for severe fits, which appear to have come on in early infancy, and to have observed very irregular periods of recurrence. Six months ago they became more frequent, having sometimes five in a day. She had experienced no benefit from the treatment adopted. Catamenia have not appeared.

On application, it is stated that she has one or two fits every day. She has no notice of their approach; has not the aura epileptica, or globus hystericus; does not struggle or foam at the mouth, but "goes black in the face." She does not bite her tongue; the eyelids are partially open, and nictitate; the fits generally last about three hours; has no headach. Ordered shower-baths, steel, and sulphate of magnesia, with an aloetic pill. On the 18th of November she was made an out-patient, appearing to be in good health, and had experienced no fit for sixteen days, and very few during the whole time of her stay in the hospital. A few days afterwards she came as an out-patient, labouring under pains in the stomach, tenderness of epigastrium, and vomiting. The fits, too, though in diminished frequency, returned.

January 6th. Feels very giddy; has pains in the head; has not yet menstruated; had a fit a few days ago; yesterday, passed several joints of tænia.

10th. Has passed a quantity of joints of tape-worm, with some lumbrici; head better.

Case XXII.—E. E., aged 25; November 29, 1853. Had one child, ten months old; suffers from dysuria, fainting-fits, giddiness, swimming sensations in the head, sight occasionally leaves her; spine tender; has had a moxa applied to the lumbar region; has passed worms. Ordered steel, ammonia, tincture of hop and quassia infusion; also a turpentine draught.

No worms followed the administration of the draught, and although a variety of anthelmintics were afterwards given, the result was the same. It is doubtful how far the symptoms in this case depended upon worms.

Case XXIII.—J. C., aged 37; November 29, 1853. Complains of soreness of forehead, occipital headach, somnolence,

occasional giddiness; never vomits her food; flat worms have been noticed in her stools; tonsils are excavated. Ordered kousso, and a colocynth pill night and morning.

December 2nd. Ten hours after taking the powder, a large quantity of tape-worm was passed. She brought me a half-pint bottle, one-third full of the parasite, and she declared that it was only one-fourth of the whole quantity passed.

6th. Has the pain in the head less frequently; tremors better; vision not improved.

13th. Sleeps badly; frontal cephalalgia; continues to pass pieces of flat worm; kousso re-ordered.

Case XXIV.—D. H., aged 12, a boy, applied December 9, 1853, complaining of giddiness and frontal headach, passed joints of tape-worm two years since, but none noticed since.

Case XXV.—E. C., aged 17; January 31, 1854. Suffers severe headach and sickness; bowels costive; pupils dilated; talks to herself, and has various delusions and terrors; passed some lumbrici last week. Catamenia suspended for three months.

Case XXVI.—M. C., aged 43, February 10, 1854. Has had for the last two months a daily uterine discharge of blood; is troubled with leucorrhœa; feels sinking sensations at night and aching in the bowels; flatus; thirst; tongue large and pale; suffers from giddiness and loss of vision; never vomits her food. Ordered kousso, three drachms; also potash solution, compound tincture of rhubarb, and calumba infusion.

14th. Complains of pain at bottom of bowels; passed a large (*quære* long) tænia four hours after taking the kousso. Pain in head much better; giddiness is gone since the worm passed; sight is normal.

21st. Is better, but feels low and sinking; tongue cleaner. Mixture and kousso repeated.

Case XXVII.—E. H., aged 14; November 7, 1854. Is suffering from worms, but the result of the treatment adopted is, unfortunately, not mentioned.

This girl was first presented to me on the 9th of October, 1852, labouring under fits, from which she had never been free more than two or three months at a time since the period of the first dentition. The fits are generally in the day-time; intellectual faculties not much impaired; considerable enlargement of thyroid gland. It was stated that she never had worms, but I was not quite satisfied with this statement, and repeated the question many times during the months she was in attendance. Scammony powders and small doses of

turpentine were prescribed, and subsequently zinc and iron in combination. Great relief was obtained, and the fits became less frequent during the eight months I was watching her. Twenty-one months afterwards she again applied, it may be presumed, for the return of the fits, for on the 17th and 31st of March, 1854, it is stated she has had no fits since. On the 7th of November following, she again returned, and the first statement then made was, that, "she has worms," as so often suspected during the previous progress of the case. I may remark that the fits came on generally during the day. It is distinctly stated that, though the lips became blue, and she foamed at the mouth, she did not bite her tongue. Nothing is stated of somnolence, loss of memory, or laryngeal symptoms. In 1852 I diagnosed the case as chronic epilepsy, and in 1854 as hysteria, but I believe neither of those diagnostic attempts to have been correct. Her age, the infrequency of the fits, and the absence of any other phenomena of hysterical nature, are opposed to the idea of hysteria. On the other hand, unless a wide definition of epilepsy is admitted, I doubt the propriety of classing it as an example of that disorder. Perhaps "eccentric eclampsia" is the better word to employ provisionally for such a case, although I shall give reasons in the second part of this paper for entertaining some hesitation in so naming it. Great confusion must ever take place in the discussion of such a subject as this, until physicians are agreed upon the necessity of withdrawing epilepsy from the nosological *cadre* altogether, and of treating it merely as a convenient term to embrace a collection of symptoms referred to the motorial and sensorial functions, including, of course, a lesion of consciousness. Still better would it be to discard it *in toto*, and to describe separately the actual symptoms of the case, without any reference to a general term. There is some evidence of the beginning of such a way of thinking among later and enlightened writers, though others still adhere to the ancient paths, and even venture upon hypotheses to apply to all cases of epilepsy. I have for a long time past treated "fits," when mentioned as such by patients or friends, not as the end, but as the beginning of investigation; not as a certain disorder, but as indicating most obscure and uncertain symptoms, connected with almost infinite variations in the economy.

Case XXVIII.—F. W., aged 50, a cook; March 24, 1854. Pain in right side after eating; general phenomena of indigestion; bowels confined; pain across the eyes; catamenia have ceased; flatulence; has tape-worm. Ordered oil of male fern,

which brought away in two hours about two yards of the worm, with relief to the pain across the eyes, but general symptoms, such as anorexia, remained.

Case XXIX.—R. R., aged 5; May 2. Applied for relief from symptoms such as are generally considered to arise from worms in children, but without cerebral symptoms, unless starting in sleep be so considered. Six months ago she passed tape-worms. Her mother is much troubled with symptoms referred to the brain, and with the parasite.

Case XXX.—M. R., aged 9; June 27, 1854. Two years ago she was seized with sudden fits of insensibility, lasting a few moments. She passed a tape-worm, and was without the fits for some time, but they subsequently returned.

Case XXXI.—M. Y., aged 60, housewife, July 31, 1857. Complains of vertigo; headach; noise and singing in ears; has tape-worm. Ordered male fern.

Case XXXII.—J. W., aged 39, a painter, April 20, 1858. Is suffering from vertigo; frontal headach; has noises all over the head, like the whizzing of a steam-boiler; at the end of January, he had a fit; sight clear; pupils normal; has discharge from one ear, and has had shiverings. After a turpentine draught he voided large quantities of tape-worm.

Case XXXIII.—J. L., aged 24, a brass-caster; April 30, 1858. Appears to have been ill but a few days, with giddiness, buzzing in the ears, frequent tremors, hesitating speech. Head feels as if it were going to part when he coughs; pupils natural; pulse regular, about 80; tongue large, flabby, but clean; has passed both ascarides and tænia.

Case XXXIV.—J. J., aged 22, a bricklayer, May 4, 1857. Has frontal cephalalgia and mistiness about the eyes; when he stoops, he sees myriads of floating objects; feels confused; memory impaired; no noises in his ears; pupils and conjunctivæ natural; tongue white in centre, red at margins; pain between the shoulders; has passed the flat-worm, some a fortnight before admission; since childhood he declares that he has passed small white fragments; has eaten much raw beef.

Case XXXV.—T. M., aged 21, a cooper; June 1, 1858. Applies for relief with symptoms of bronchitis; suffers from vertigo, fatigue, and drowsiness; sight good; has colicky pain in bowels; itching of nose and anus; pupils natural; has voided about a yard of tape-worm; has eaten a great quantity of raw sausage.

Case XXXVI.—A. W., aged 17, a girl; June 1, 1858. Feels very giddy; eyes misty; noises in the ears; has been rather deaf for the last fortnight; pupils slightly dilated; tongue

rather coated, moist; suffers from colicky pain in belly, and itching of the nose; catamenia regular; says she had fever seven months ago, and headach ever since; eight months ago she passed flat and jointed worms, and says that all her brothers and sisters have voided flat worms.

Case XXXVII.—J. D., aged 30, a file-cutter, June 18, 1858. Has the general symptoms and indications of phthisis in first stage; occipital cephalalgia; vertigo and "fizzing sensations" in head; ringing in the ears and dimness of vision; itching of the nose and anus; pupils somewhat contracted and sluggish; tongue moist, slightly coated; has voided flat, jointed worms.

Case XXXVIII.—M. L., aged 21, single; June 18, 1858. Suffers from fits, in which she bites her tongue; headach precedes the fits; pupils dilated; catamenia irregular and pale; has passed both ascarides and lumbrici.

Case XXXIX.—A. C., aged 17, single; June 18, 1858. Suffers from frontal headach; giddiness and tremblings to such a degree as to be obliged often to sit down; pupils somewhat dilated; has voided flat worms; a draught containing the male fern was ordered, which brought away about a two-ounce phial full of tænia, with relief to the tremblings, but headach persisted on the 25th of June, when last reported.

Case XL.—W. C., aged 5 years, a boy. Is said to have been ill but a few days. Has had several fits; complains of pain over the right eye, of ringing noises in the ears, and of pains in the stomach; pupils rather contracted; often fingers his nose and anus; appetite ravenous; tongue slightly coated. Has passed flat worms.

Case XLI.—S. V., aged 50, November 9, 1858. Suffers from hemicrania, recent dimness of sight, giddiness, and is troubled with flat worms.

Case XLII.—S. B., aged 18, a girl; November 16, 1858. Complains of giddiness, frontal pain, pain and noises in the right ear; marked anemia. Passed tape-worms when young, and during the last four months.

December 10th. Has passed tænia, having been ordered a male fern draught; giddiness and pains less.

Case XLIII.—M. G., aged 14, a boy of full habit, admitted March 22, 1852. Labouring under acute general eczema; has been subject to ascarides and tape-worm for a long time, and occasionally passes them in great quantity; bowels usually confined; tongue clean; appetite good; is free from pain, with the exception of a little headach.

Case XLIV.—M. A. B., aged 14, a girl, well constituted;

admitted April 20, 1854. Has suffered from epileptic seizures for twelve months, almost constant headach, and drowsiness; passed flat worms before the fits commenced, and for many months afterwards. No worms were evacuated during her stay in hospital, and she left but little relieved. No hereditary tendency to fits. The catamenia had not appeared.

Case XLV.—J. B., aged 13, a boy, of sanguine temperament, admitted March 17, 1857. Has always enjoyed good health until five weeks since, when he was seized with an epileptic fit of a mild character. His countenance is not indicative of an epileptic conformation. He has constant frontal cephalalgia, with vertigo. Has never had a blow on the head, or been frightened. Has had worms, both tænia and ascarides, in his stools, months back. Is conscious of the approach of the fit, which commences with dimness of vision, and he then becomes nearly blind; a sort of tremulous movement then pervades the whole frame; his eyes remain closed, but there is no foaming at the mouth or biting of the tongue; is stupid after the fits, of which he has two nearly every day. The abdomen tympanitic, but no pain or tenderness on pressure; tongue clean; papillæ slightly elongated; urine abundant, containing a yellow sediment, but no albumen; specific gravity 10·15 acid. The report of the case states that ascarides were several times observed in the stools. He left the hospital on the 17th of April, greatly relieved, no regular fit having come on since the 31st of March.

Case XLVI.—J. E., a miner, aged 30, admitted May 8, 1855. Labouring under fits, which he states that he has had since he was fourteen years of age. The fits come on without warning, generally in the night, about once in three months, but sometimes oftener. They are attended with bleeding of the nose and ears, contractions of the extremities, and distortion of features. In the intervals he suffers from pain in the head, drowsiness, and "feels stupid." Heart and respiratory organs normal; bowels rather confined; tongue slightly coated; has never had an injury to spine or head, but states that he has been much troubled both with round and flat worms; ordered kousso and castor oil.

9th. His bowels were open three times yesterday; passed a long tape-worm and a great number of ascarides; pain in the head better; ordered turpentine and castor oil.

14th. Giddiness and pain in head better.

28th. Has great pain occasionally at the epigastrium, but giddiness and dimness of sight better.

31st. Has passed several portions of tape-worms in his

stools, and the head symptoms are relieved. Discharged June 8th, no fit having come on while he resided in the hospital.

Case XLVII.—S. M., a female domestic servant, aged 20, admitted March, 1857. Has been suffering for several weeks from gastric irritation, indicated by pain at epigastrium, nausea, occasional vomiting, and a low, nervous condition. Tongue coated, pale, papillæ abnormally prominent through the fur; bowels costive; urine scanty; appetite much impaired; moderate thirst; bitter taste in the mouth; has a sensation of beating in the head, with frequent vertigo and confusion of ideas; is frequently troubled with tinnitus aurium to such a degree as to produce temporary deafness, pains, and noises in the head, which appear to be aggravated by the recumbent posture. The catamenia have only appeared twice during the last twelve months, and then only scantily. She appears to have been out of health for two years, but was attacked about twelve weeks ago with severe symptoms connected with the nervous system, and, as described by her previous medical attendant, of a cataleptic character. These paroxysms were preceded by violent pains in the head, dimness of vision, and a feeling of overwhelming oppression; there were suffocating sensations about the throat, attended with evolution of flatus. The fits lasted sometimes two or three hours at a time, or even for a whole day, in which she was completely unconscious. During her residence in hospital she had several fits, of one of which the following is a description:—After being pretty cheerful, she became very quiet, and complained of headach and dimness of vision, and ringing in the ears; she then raised her right hand, and, with the forefinger extended, works it to and fro in the air in a vertical plane; the eyes everted, open, and fixed; the countenance, meanwhile, is not in the least changed, but she is insensible to external impressions, and so continues for a variable period of time. She has frequently passed tape-worms in her motions.

Among other remedies, she was ordered the oil of male fern twice. The first draught produced no effect, but after the second a considerable quantity of the flat worm was evacuated. The symptoms alternated greatly from day to day, and she still suffered from the recurrence of fits, headach, giddiness, and nausea; a slight icteric tinge became evident, connected apparently with most obstinate constipation, for which she was ordered croton oil and senna.

May 3rd. Feels rather better; has had little or no sleep; pulse frequent, but evidently accelerated by extreme nervousness; tongue still furred, and rather dry; slight thirst; little

appetite. The croton oil and senna have brought away two dark, slimy, partly fluid and partly scybalous motions, in which were fragments of tænia.

5th. Feels languid; is very restless; has considerable pain in back, head, and abdomen; bowels opened once; fragments of tænia observed; catamenia flowing freely; stomach very irritable, nausea being produced by the blandest diluents.

7th. A fit, characterized by the phenomena before described, came on to-day, attended with heaviness, languor, and throbbing pain in the head.

After a considerable time this patient left the hospital, much improved in general health, and relieved greatly as regards the peculiar hysterical paroxysms. It should have been observed that turpentine and kameela produced no effect upon the worms.

Case XLVIII.—T. J., a young gentleman, aged 20, extremely pale and thin, called on me May 18, 1858. He has never enjoyed good health, and during the past winter had a most severe attack of typhoid fever, followed by albuminuria, from which his convalescence was very tedious. About a fortnight ago he first came to know that he had tape-worms. He immediately applied to his brother-in-law, a surgeon, who administered to him a dose of turpentine, with the effect of bringing away an immense quantity of the parasite. He states that during the last two or three years he has suffered severely from giddiness, dimness of vision, and occasional noises in the ears; eyes sometimes as if dazzled; has experienced tremors in the arms to a great degree, and sensations of numbness in the hands and face, and up the arms; has suffered from paroxysms of most severe occipital cephalalgia, which generally supervened upon the attacks of numbness, and were followed by sickness; tongue constantly numb on these occasions; has never had a fit; lately experienced itching at the nose, and formerly to a considerable extent about the anus; has not suffered from abdominal pains, excepting about a month ago, when he was once attacked during the night with pain in the right side of the abdomen; appetite always good.

Since the expulsion of the worms he has had neither cephalalgia, giddiness, tremors, nor numbness; his sight and hearing also have remained unaffected.

Case XLIX.—The father of the above had, for a long time suffered from intense cephalalgia, and other symptoms referred to the nervous system, for which he had sought much advice. He then was advised to take a vermifuge, which was attended with the expulsion of a vast mass of tape-worm, aggregated by mucus into a consistent ball: when placed in water,

it nearly filled a wash-hand basin. Complete relief was obtained.

Case L.—A grandson of the last, 11 years of age, had suffered from ascarides for several years, which produced great uneasiness about the anus. The constitution is leuco-phlegmatic, and his face extremely pale. Last Christmas, on being informed of his symptoms, and especially of his headach and heaviness of manner, I advised his father, a surgeon, to administer a dose of male fern; a large quantity of tape-worm was evacuated, and the result was a most satisfactory alleviation of the symptoms, a certain stupidity or heaviness of manner having yielded to the natural brightness of childhood.

Such is a fair record of my experience of symptomatic verminology during the past seven years. It conveys, I repeat, but a very inadequate view of the extent of my observation during the ten years and a half I have resided in this town, but will give a sufficiently complete impression to a careful reader of the range of morbid signs which ordinarily accompany the presence of parasites in the intestinal canal of the human subject. When I survey the ample literature referring to intestinal worms, and mark the scantiness of allusion to the aberrations of nervous functions, and contrast such statements with the results of my experience, I am at a loss to account for the discrepancy but on one of two grounds—either that the personal clinical experience of the writers on this subject has not been sufficiently great, in a small space of time, to give a full glance of the matter; or that their minds have been insensibly warped by the averments of great authorities. It has been well observed by the admirable Gooch, in relation to the symptoms and treatment of one form of puerperal fever, that "when cases occur at long intervals, the effect of one fades in the mind before that of another is made, so that they do not mingle, and produce a distinct impression; but when they come in clusters at the same time, they rouse the thinking powers of the mind; one case casts a strong light upon the other, and the result is the formation of decided opinions"[a]. This statement is applicable to my own case, while investigating the symptoms of intestinal worms. Their constant recurrence among hospital and other patients served to fix my mind upon morbid indications which would, probably, otherwise have escaped my notice. The opposite condition of mind,

[a] An Account of some of the most important Diseases peculiar to Women. By Dr. Gooch. Page 71.

produced by rarity of the disease in a given locality or class of patients, may be appreciated by such circumstances as these. Three years ago, I asked one of the oldest and most experienced medical men in this town what were the indices on which he relied for the determination of the presence of tapeworm in the adult. He answered, with great simplicity, and, I am sure, with perfect truth, that he relied only on the actual statement of the patient that he was suffering from the parasite. One of the most distinguished physicians of this or any age told me, last autumn, that he relied mainly for the establishment of a diagnosis on the passage of the worm per anum into the clothes or the closet.

In reference to the latter source of error, that arising from the declaration of authors who have written with authority upon the matter, there is certainly abundant excuse for the imperfect knowledge of their readers, some of the most notable of recent observers having all but ignored, in set form, the facts which it is the object of this paper to illustrate. I would here again quote the same great physician from whom I have already borrowed:—"If the object of the student is to learn only what has been *said* on a subject, the pursuit of knowledge is an easy task; but if his object is to learn what is *true* on a subject, the pursuit of knowledge is the task of a life."

(*To be concluded in the next Number.*)

Art. XII.—*Pathological Researches.* By B. Wills Richardson, F. R. C. S. I., Member of the Court of Examiners of the Royal College of Surgeons in Ireland; one of the Secretaries to the Surgical Society of Ireland; Surgeon to the Adelaide Hospital.

1.—MUSCULAR TUMOURS.

Having had unusually large opportunities for examining uterine polypi and tumours, I am induced to place on record the results of repeated investigations relative to the intimate structure of these peculiar growths.

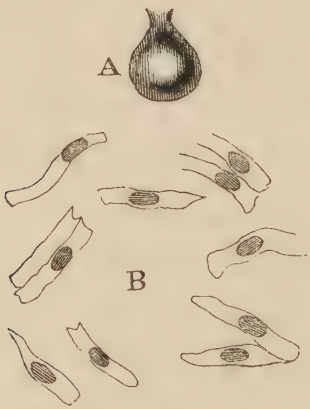
One of the most interesting questions in pathology is the origin of tumours resembling the natural structure of the organ with which they are connected, either by continuity of tissue, or, what is more extraordinary, by simple contiguity, the new formations being isolated by cysts, which clearly removes these tumours from the class of true hypertrophies.

Since attention was specially drawn to this subject by Drs. Oldham, Barnes, Bristowe, and others, various communications have, from time to time, appeared in the Journals, mostly confirmatory of the views of those who insisted upon their muscular nature.

Dr. M'Clintock having placed at my command the large opportunities which the Lying-in Hospital affords for investigating this subject, I scarcely omitted the examination of any one of the polypi removed there, or of the so-called fibrous tumours which are occasionally found embedded in the uterine parietes after death.

From these investigations I have been led to the conclusion that a large majority of polypi and tumours of the uterus are composed of fibro-muscular structures, i. e. of fibrous tissue intermingled with organic muscular fibres and fibre cells, some of which are represented at B, Fig. 1, and were taken from a small polypus of the size shown at A.

Fig. 1.



Some pathologists have met with tumours which they considered were solely composed of organic muscle, but in the specimens I have seen, fibrous tissue was likewise present.

The uterus is not the only organ with which muscular tumours have been found connected, as they have been found in the testis by Rokitansky; and both Virchow and Kölliker have discovered "elongated fusiform transversely striated cells" in an ovarian tumour. The prostatic region is also a favourite seat for these growths, which has assisted in originating the idea of the analogy between the prostate and uterus.

According to Mr. Harrison[a], Velpeau was the first to suggest this idea. He "rested the analogy upon the correspondence which he assumed to exist in the two sexes between the uterus and the prostate, from a belief that the two organs originated from the same centres of development in the early condition of the ovum, coupled with the fact that both are liable, in after life, to exhibit tumours presenting similar external characters."

The following reasons have been given by authors, and by Mr. Harrison[b], for considering the prostate and uterus morphological equivalents:—

1st. The prostate, although not of itself the absolute equivalent of the uterus, contains in it the utricle, situated in the very centre of the organ.

2nd. The prostate and uterus are constituted of the same tissue—organic muscular fibre.

3rd. The two organs are very frequently the seat of tumours, identical both in external and histological characters.

4th. A tumour having polypoid characters, and more intimately connected with the uterine structure than the muscular tumour, resembles one having the same characters growing from the posterior median portion of the prostate.

5th. Both organs are liable to hypertrophic enlargement.

6th. They are both liable to these changes after the prime of life has been passed.

Vogel attributes the formation of fibro-muscular tumours to the law of analogous formation, "for a cytoblastema secreted in excess is, through the influence of the surrounding tissue, converted into a similar substance, as in cases of hypertrophy."

According to this theory, independent tumours of simple muscular fibres (fibroid) should only be found in the situations of normal fibro-muscular structures.

The case observed by Virchow does not militate against it, as smooth muscular structures have been demonstrated in the testis. There is some difficulty, however, with regard to Kölliker's specimen, as *transversely striated* fusiform cells were found in it. Possibly they were derived from the round ligament of the uterus, which sometimes contains *striated* muscular structures, and which may have been involved in the tumour; but this is mere supposition, as there is no allusion to such a connexion in his description. Moreover, they were not fibres, for he tells that they had the appearance of transversely striated cells, each with a nucleus, similar to those seen in the tadpole.

According to Vogel's investigations, the development of ab-

[a] The Enlarged Prostate. [b] Ibid.

normal muscular growths and normal smooth muscles takes place in the same manner. In both cases nuclei are formed, and usually a fluid cytoblastema; the former are at first roundish, but subsequently become elongated and pointed, somewhat in the form of an oat-grain, and somewhat arched. Around these are formed elongated cells, which gradually join at the extremities, and at length become fibres. In some cases, however, matters do not proceed so regularly, and muscular fibre appears to be generated "without any preceding formation of cells."

In conclusion, then, I repeat, that a vast number of benign uterine tumours, if carefully prepared and examined, will be found to contain smooth muscular structures, so that the appellation "muscular" applied to such growths is strictly correct.

2. THE SO-CALLED CAULIFLOWER EXCRESCENCE OF THE OS UTERI.

This name has been rather loosely used by writers on uterine pathology, and has been applied to different varieties of malignant growths from the neck of the womb.

Until a comparatively recent period, cauliflower excrescences were placed among the epithelial cancers. It is now known, however, that they are frequently composed of structures similar to those seen in medullary cancers. But it should be recollected that the records of surgery likewise furnish instances of non-malignant epithelial uterine growths, such, for instance, as the warty excrescences of the os uteri.

Of three cases that lately came under my observation, two were constituted of structures having the same characters as those of medullary fungus; the other presented some difficulty in regard to the form of cancer to which it belonged; but as epi-

Fig. 2. Fig. 3. Fig. 4.

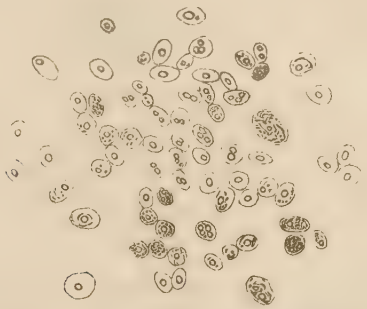
thelial structures predominated in it, I have placed it among the epithelial cancers. This was one of those specimens which show the difficulty of deciding as to the nature of a cancer, from the characters of a single so-called cancer cell; and, were it not that the vast majority of the cells assumed the epithelial cha-

racters, at the same time that they were *infiltrated* through the fungus, I would have had some difficulty in naming it. Thus at Fig. 2 are represented some of the epithelial-looking cells, which predominated in the fungus, but at Figs. 3 and 4 we have an illustration of some of the other cells of the same fungus, which formed the lesser amount of cells in the growth. These were smaller than the first, had a larger nucleus, and one at the lower part of the figure had two of these nuclei. Again, I also found in this excrescence elongated cells with nuclei, which are often seen in both medullary and scirrhous cancers (Fig. 4). That very excellent observer, Mr. Paget, believes that cases may be found "in which the cancer cells, or part of them, have characters intermediate, or transitional, between those of the epithelial and of the scirrhus or medullary diseases."

According to Lebert and Hannover, two kinds of cancer may be mingled in one mass. Such may have been the case in this instance; or the small cells represented at Fig. 3 may have been young epithelial cells undergoing development into the full-sized cell, as some pathologists have thought that such young cells have larger nuclei than the mature cell. This, however, notwithstanding all that has been written on the subject, must be a most difficult question to decide; as I cannot believe that any one could assert positively that some of the cells of Fig. 3 would have ultimately assumed the characters represented in Fig. 2.

I have said before, I formed my opinion as to the composition of this excrescence from the predominance of infiltrated epithelial structures through the mass.

Fig. 5.



With regard to the two medullary fungi, there was no difficulty. In these, vast numbers of small round and oval nuclei were seen (Fig. 5).

Some of these nuclei, loaded with oil globules, have apparently undergone a process of fatty degeneration. These small, oval, and round nuclei are frequently seen in medullary disease: for instance, there has lately come under my observation a malignant fungus of the orbit, and another of the breast, in which similar nuclei predominated.

The disease in the three women who were the subjects of these cauliflower excrescences ran the usual course; in all, hemorrhage was a prominent symptom, causing great exhaustion, and death ultimately took place.

3. CALCAREOUS AND FATTY DEGENERATION OF THE PLACENTA.

Dr. Barnes, of London, was one of the earliest writers to draw attention to that state of the placenta known as fatty degeneration. Fig. 6 represents some of the vessels of a placenta which afforded very excellent specimens of both fatty and calcareous degeneration. C, D, and E (Fig. 6) represent the size and appearance of the calcareous deposits, which effervesced, and totally disappeared on the addition of hydrochloric acid, leaving the small refractive oil globules intact. In some of these cases, apoplectic clots are met with, and to these may be attributed, in not a few instances, the death of the fœtus in utero (Fig. 6).

Fig. 6.

When this degeneration has proceeded so far as to interfere seriously with the functions of the placenta, the nutrition of the fœtus must suffer; and if these extravasations occur at a comparatively early period of gestation, the death of the infant will most probably take place.

Nevertheless, the disorganization may proceed to a certain extent, without necessarily entailing the destruction of the fœtus.

It is interesting to observe the analogy between this fatty degeneration of the placenta and that of the minute cerebral vessels, a state to which the vast majority of cases of apoplectic effusions, after fifty years of age, may be referred, and the discovery of which has checked the wholesale venesections by which this accident used to be treated.

Art. XIII.—*Contributions to a New Scheme of Prison Dietary.* By Edward Smith, M. D., LL.B., L.R.C.P., Assistant Physician to the Hospital for Consumption and Diseases of the Chest, Brompton, &c.

The subject of this contribution is one which constitutes a part of a larger inquiry into the influence of various agents over the respiration. It is also one which has greatly interested me, and, in the belief that it has not obtained that attention from men of science to which it is entitled, I have been induced to pursue it as far as was consistent with my professional engagements. It will, I believe, well accord with the spirit of philanthropy which is so evident in our profession, if my professional brethren who are visiting justices or surgeons of gaols, should give a little attention to the subject, with a view to the practical application of some of the results which have been obtained; and it will be gratifying to find that increased interest is manifested in a subject which we all admit to be important, and of which they are the most competent judges.

It is now some years since the Government confided to a number of gentlemen the task of devising a dietary which might be adopted in all the county prisons, but which was not intended to be introduced into military prisons and convict establishments: and, in a letter of instructions, Sir James Graham laid down the important principle, that the dietary should not be made an instrument of punishment. Hence it became the duty of the Commissioners to provide a dietary which should be equal to the wants of the system under all the ordinary conditions of prison discipline, a task of no little difficulty, both from the imperfection of knowledge as to the action and nutritive value of foods, and the almost incredible diversity of management in the county gaols. The scheme was presented, and embraced nine classes of prisoners, and five classes of dietary; and to it were appended two noticeable statements, viz.:

that they regarded the scheme as indicating the minimum quantity of food which should be supplied; and that Mr. Hill had dissented, on the ground that science could not show, with sufficient certainty, the precise influence of various kinds of foods, and his fears lest the amount of food thus recommended should be inadequate to the wants of the prisoners.

I have elsewhere analyzed this scheme[a], and have endeavoured to prove that the principles upon which it is founded are erroneous. These are, first, variations in the quantity of nutriment supplied according to, and increasing with, the term of imprisonment: so that, for a term of seven days, only one pound of bread and four ounces of oatmeal are allowed daily; whilst for four months and upwards there is an allowance of twenty-two ounces of bread, and one pound of potatoes daily, four ounces of oatmeal four times, and two ounces thrice a week; one pint of cocoa with molasses thrice per week, with four ounces of cooked meat without bone four times, and three ounces three times per week,—quantities which evidently indicate deficiency on the one hand and excess on the other. Second, variations from day to day, so that the nutritive value of the food differs greatly. Third, insufficient increase with hard labour, so that the vastly increased and excessive exertion of the tread-wheel labour during three weeks is supposed to be compensated by giving *a pint of soup weekly!* and hard labour of every degree, enduring from six weeks to four months, is supposed to be equal to the effect of imprisonment without labour for four months, and over four months, respectively. It is difficult to suppose that the penal quality of dietary was not introduced into this scheme, but it is clear that it is based upon the general, but erroneous, belief that there is some quality in confinement which calls for an increasing supply of food,—erroneous, because prolonged inaction is properly met by lessened food and increased exercise, and because the necessity for increase of food is clearly owing to the insufficiency of food at the beginning, and particularly in those condemned to hard labour.

There was no power to render the adoption of this scheme compulsory, and, when we consider its palpable defects, and the want of precise knowledge, both in relation to the effect of labour and the action of food, we cannot be surprised that county magistrates have thought for themselves, and that at the present moment only one-half of the county gaols have adopted the scheme. A return, entitled "Dietary for Con-

[a] Transactions of the Society for the Promotion of Social Science, 1858.

victs," was issued by the Government in 1857, which is well worthy attentive and, as it must be, laborious perusal. I do not mean to refer to it further than to show that there is a diversity of dietary in institutions which are identical in their purposes which is astounding, and cannot but be regarded as a disgrace to the scientific knowledge of the present day. This may be shown by a simple contrast of the dietaries of two sets of prisons. Thus, at the Cardiff Gaol, the dinner consists of half a pound of bread, only, to prisoners condemned for three and fourteen days (one pound of potatoes is added to those condemned for seven days); and for all other durations the amount is simply half a pound of bread and one pound of potatoes. On the other hand, at Brecon, another Welsh gaol, all prisoners condemned from fourteen days to two months have six ounces of meat, half a pound of bread, and half a pound of potatoes, four times a week, and potatoes and bread alone thrice a week, whilst for all exceeding two months the quantity of potatoes is increased to one pound. The dietary in the Middlesex prisons is still better than that of Brecon, since meat is given several times a week at Coldbath Fields to all condemned above fourteen days, and daily to all condemned above two months. Thus the same beings, for the same crimes, and with the same sentences, have this great diversity of treatment. The "Return" shows that this diversity of dietary extends not only to quantity and variety of food, but even to the number of meals, so that at St. Albans only two meals are allowed per day.

As dietary is essentially associated with labour, it is necessary that I should state that there is no uniform plan of labour in county gaols, but, on the contrary, that the diversity is almost past belief. The various kinds of labour in prisons may be thus stated: cleaning, repairing, manufacturing, oakum, wool, or hair picking, stone-breaking, grinding, carrying a cannon-shot (the shot drill), turning a crank, and the tread-wheel. With a view to ascertain how far any general plan of punishment existed, I addressed, in 1858, queries to the governors of nearly every county gaol in England, and was favoured with upwards of sixty replies, and from these the following resumé has been prepared:—

"Some of our county prisons find no labour at all; others only that of ordinary trades; others have crank labour alone; others tread-wheel labour alone; whilst in many, one of the two or both of the two latter forms of hard labour are conjoined with some kind of trade. In many the tread-wheel and crank are

unprofitably employed, whilst in others they are used as mills or pumps. In some, women even work the crank and the tread-wheel. In some the crank and tread-wheel are exceptional employments; in others they are universally used, but for a small part only of the sentence; whilst in a third class they are constant employments during the whole term of imprisonment. In most gaols they are chiefly employed for short sentences, and therefore for small crimes, and with insufficient food; whilst the light occupations are reserved for long sentences, with greater crimes or frequent repetition of criminal acts, and excessive food! In some they are worked for an hour without intermission; in others, thirty, twenty, fifteen, ten, and down to four minutes only at a time. In some they are enforced for three hours daily, and simply as exercise, whilst in others the labour endures ten hours. In many, boys of fourteen years of age work the wheel and the crank, whilst in others grown men make shoes or pick oakum only. In some the ordinary rate of the ascent on the tread-wheel is fifty-six steps, of eight inches each, per minute, whilst in others it is so low as thirty. In some the ordinary pressure on the crank is seven pounds, at others twelve pounds; the pressure being certain and demonstrated by weights in one, and uncertain, depending upon the turning of a screw, in another. In some the ordinary number of revolutions of the crank per day is 14,400, whilst in others, in which the crank is still the chief instrument of punishment, it varies from 13,500 to 6000 or 7000, at the discretion of the surgeon, the prisoner being still without actual disease. In some the day's work may be performed in any part of the twenty-four hours, with the index showing the number of revolutions performed, within sight of the prisoner, whilst in others it must be performed before the night, and with the index outside the cell, and so that the prisoner is unable to ascertain from time to time how much labour he has yet to perform. In some, pumping is performed for one hour only, and even during that short period, as at Reading, there is no method of determining if any individual prisoner is labouring or not, while in others the labour is for the whole day pumping water into the sewers. Oakum-picking is regarded as no labour in one prison, and as hard labour in another; and in the latter it is two pounds for a day's work, at Wandsworth and Westminster, and three pounds at the Coldbath Fields, whilst it is five pounds at a workhouse. In some the prisoner, by good conduct, obtains light labour, a commendatory badge, and a pecuniary reward; in others it is the tread-wheel from the first to the last; whilst

in many, as at Wandsworth, the change of labour is due neither to crime, sentence, nor conduct, but to the number of the prisoners."

Nothing further than this can be necessary to show how nearly hopeless it is to propose a scheme of dietary which, by any arrangement, might be fitted for all these prisons, and also how blindfolded is Justice, not only in figure but in reality, as she administers the laws in this enlightened country. It certainly is one thing to be a prisoner at Cardiff or Reading, and quite another thing to undergo the same sentence in Middlesex or at Leicester.

I now proceed to state the result of my inquiries as to the influence of these various kinds of exertion, and, adopting the dictum of Sir James Graham, viz., that the dietary should not be an instrument of punishment, I shall first indicate the circumstances which demand a variation in the quantity of food supplied, and then state the quantity of food which will meet the wants of the system under different conditions.

1st. The circumstances which call for variation in the quantity of food supplied, are, sex, age, size, season, employment, and conformation of body.

Upon many of these conditions we have recently obtained most valuable information from the pen of Mr. Milner, the surgeon to the convict side of the Wakefield Gaol, in a paper which was read at the last Meeting of the British Association at Leeds, and since published in the Sanitary Review. It has been obtained in reference to the gain or loss of weight of the prisoners conjoined, with careful attention to the state of the muscles and the blood, as indicative of health; and extends over an experience of eleven years, and includes 40,000 weighings. It is inapplicable to my present purpose only in one particular, viz., that the dietary of all the convicts is fully equal to that of the highest class only in the scheme for convict prisons, since it consists of ten ounces of bread, four ounces of cooked meat without bone, half a pint of soup, one pound of potatoes, two ounces of oatmeal, and three-fourths of a pint of milk daily. In applying it, therefore, to the lower classes of dietary in county prisons, I shall lessen the force of the argument, for it is certain that whatever ill effects have resulted from this liberal dietary they would have been greater with a much inferior supply of food, although for shorter periods. It is, however, the only information of the kind, and may be in all respects fully relied upon. No prisoner is placed upon extra diet unless he show evident signs of injury, and

yet, with so large a dietary, Mr. Milner has shown that it is insufficient.

In reference to age, Mr. Milner has shown that, up to thirty years, the addition to the weight which should accompany growth is not equal to the standard in health and freedom, and hence, although there may be an actual increase in weight, there is, in fact, a deficiency, and this is to the average extent of one pound and three-quarters for each person under seventeen years of age. The general results prove that the above-mentioned dietary is insufficient for the period of growth, but somewhat excessive for the old; and that at seventeen years of age the amount of food required to maintain a due amount of growth is quite equal to that for the fully developed adult, whilst after fifty years of age the quantity may be lessened.

Mr. Milner also proved, that for all persons of unusual height the food allowed was insufficient; and that persons of a girth of fifty-four inches or upwards lost weight on that dietary, in a rapidly increasing ratio.

Duration of imprisonment had but little average influence when it extended over a lengthened period, but it was influential in shorter durations. Thus, during the first two months the prisoners gained weight, because the anxieties attending their trial had terminated, and many were then put upon a dietary better than that usually enjoyed by them; after this period they began to lose weight until additional food was supplied (the extra diet being usually bread and milk), and the balance was thenceforward maintained. On the whole average the effect of duration of imprisonment was scarcely perceptible.

The amount of labour exacted was very influential. At Wakefield the sole employment is manufacturing mats and matting, and in some departments the labour is very great. The dietary was so insufficient that the extra diets amounted to from one-third to two-thirds of the whole number of prisoners, and, notwithstanding this, the loss of weight in the weavers of wide widths of matting was so great as an average of seven pounds per man.

Such are the results obtained when a uniform and liberal dietary is adopted, and where there are none of the usual prison punishments. I have endeavoured to carry out inquiries in a different direction, but tending to the same end, in reference to the effect of the usual prison punishments, as evinced by the amount of carbon excreted by the lungs. I find that the effect of the tread-wheel at the Coldbath Fields Prison is upwards of five times that of inaction during the period of

labour, and one half more than inaction in the intervals of rest, so that the actual result of the tread-wheel labour during seven and a half hours, with its alternate work and rest, is more than three times greater than that of inaction. There is, however, the same want of uniformity in the tread-wheels of different prisons, as has been already exposed in reference to dietary, and they vary as 3 to 4. The crank, when heavily loaded, has an influence much greater than that of the tread-wheel, since the number of revolutions demanded occupies about eight hours, and does not permit of frequent intervals of rest. This instrument, like the tread-wheel, differs greatly in its penal power in different prisons, but in some experiments which I made at Wandsworth Gaol, the effect of a given number of revolutions by the same machine was precisely the same, whether they were made slowly and occupied a long period, or were performed more quickly in a shorter time. Hence the total effect of the day's labour on the same crank varies chiefly with the number of revolutions performed; but if cranks with different pressures be used, the increased effect of the heavier pressure was exceedingly marked. The shot-drill varies in effect with the weight of the shot, the pace being equal; and with a twenty-four pound shot the effect is equal to that of the crank during the period of the drill.

Thus the ordinary tread-wheel worked at a moderate speed, say fifty-four steps of eight inches each per minute, a crank with a pressure of eight or ten pounds, and the shot-drill with the twenty-four pound shot, produce nearly equal effects, and each cause a total waste of more than five times the amount of that from inaction. The labour in weaving cocoa-matting is much less than that with the tread-wheel, crank, or drill; and since we have seen that, with a very liberal dietary, the waste in the weavers was much greater than the supply, it is easy to see how frightfully deficient must be the diet of bread and gruel in the scheme for county prisons, when associated with tread-wheel and crank labour; and how very like adding insult to injury it is to make the distinction in the dietary for tread-wheel labour and no labour to consist simply in one pint of soup per week.

The influence of season is of special interest and importance. Mr. Milner found, from 40,000 weighings, that the prisoners lost weight from September or October to April, and gained weight in the other months of the year. The change in each direction was abrupt, yet in that prison an attempt is made to keep a tolerably uniform degree of temperature, and the labour is not different from that of mechanics. I have

shown in papers read this year at the Royal Society, and at the Royal Medical and Chirurgical Society, that the human system varies in its amount of vital action at different seasons, so that it is the least active in summer and the most in winter, corresponding precisely with Mr. Milner's results. The waste of system at rest is at least one-sixth less in summer than in winter; and the effect of season so far extends to exertion that the effect of the latter in inducing waste varies with the effect of season on the body at rest. The amount of waste does not, however, measure the whole effect, for with it there is less appetite for food, and if the same amount of labour be exacted in summer as in winter, the exhaustion is greater in the former. This is seen by the state of the prisoners on the tread-wheel at the two seasons; and is very familiar to us in the state of cab and omnibus horses in summer and in winter. Hence, with lessened food, and increased difficulty in preventing excess of heat in the body, there should be less labour demanded.

The variation amongst men in reference to their conformation or constitution, and, therefore, to their tolerance of adverse influences, is very marked, so that in my experiments on the quantity of carbonic acid evolved, Professor Franklin, F.R.S., and myself differed as 17 to 26, both of us being nearly of the same age and height, but differing in robustness of system. This variation is of general application, but there are special causes affecting prisoners in relation to their punishments, such as the degree of muscular development in the different parts of the body which are variously engaged in prison punishments.

Thus, on a review of the foregoing clauses, we arrive at the conclusion that there are numerous circumstances which affect the amount of food which should be supplied to prisoners, and that it must be unjust to provide only for the minimum of want. If but one dietary is provided, it ought to meet at least the average waste, but as that would involve an excess of food in some, and a defect in others, in order to produce the average, reason and humanity demand that the supply of food should vary with the waste exacted. Moreover, if it be admitted that the food should meet the wants of the system, it is economical to provide for this from the beginning, since otherwise extra diet must be supplied, and, being once given, cannot be subsequently withdrawn without great risk.

The following general regulations appear to me to demand consideration:—

1st. The supply of food must meet the wants of the system.

2nd. Variations in the amount of nutriment supplied are

unnecessary in relation to the duration of imprisonment, and from day to day, provided the quantity at first supplied be suited to the wants of the system.

3rd. Growing persons must be supplied with excess of food to support the development of the system, whilst in old people the supply may be lessened. Persons of unusual size demand an increased supply of food.

4th. From December to April, both inclusive, the supply should be $\frac{1}{6}$th greater than during the other months.

5th. The supply of nutriment must vary with the labour exacted, and when violent exertion is demanded throughout the day, the food should be nearly equally distributed over the three meals.

6th. With violent exertion, the meals should not be too bulky, in order to avoid undue impediment to the respiration.

7th. Other things being equal, that food should be selected which will fulfil these indications at the least cost.

I now proceed to state the result of my inquiries as to the amount of food which should be supplied.

In forming a scheme of diet based upon these principles, and suited to the different prisons, in which, as I have shown, the discipline is so exceedingly varied, it appears to me that there should be a basis dietary which would be suited to the wants of the system in a state of quietude, and after having determined the wants of the system under various kinds of exertion, to apportion a dietary to each degree, which shall be a multiple of the basis quantity. This would provide a scheme which might be adopted equally well at the Reading Gaol, with its almost complete absence of labour; at the Wakefield and Durham Gaols, with their manufactures; at the Leicester Gaol, with its tread-wheel; at the Wandsworth Gaol, with its crank; as well as at many prisons in which there is a combination of these conditions. In no other manner can the evils complained of be satisfactorily removed.

Of the three classes of foods, or elements of food, viz., nitrogenous (flesh-forming), hydro-carbonaceous (heat-generating), and saline, my experiments have reference to the second only, and consequently, in my remarks upon nitrogenous food, I must follow in the footsteps of previous observers; moreover, I have determined the quantity of carbon expired only.

The amount of carbon which was exhaled by myself and three other gentlemen of different ages, in a state of rest was 7·144 oz. in twenty-four hours, and if to this be added $\frac{1}{10}$th of that quantity for loss of carbon by other outlets, as ascertained

by Barrall, the total quantity of carbon which is lost, and must be replaced, daily, is 8 oz. avoirdupois.

The amount of nitrogen which must be supplied may be estimated by reference to the proportion of nitrogen and carbon in milk and bread, the two substances upon which the life of man mainly depends at different ages, and each of which would suffice to maintain life for a considerable period. In cow's milk the nitrogen to the carbon is as 1 to 11, and in bread as 1 to 22, and as it is highly probable that the former proportion is unnecessarily high during adult life, and the latter too low, it would be proper in prison dietaries to take the mean of the two, and let the proportion be as 1 to 16·5; this would give a requirement for 8 oz. of carbon, and somewhat more than 200 grains of nitrogen daily, and this, I think, ought to be supplied to the prisoners, on the average, in a state of rest.

The precise form in which the substances may be given is a matter of detail, but we have a good standard of comparison in bread—a substance which is tolerably uniform in composition, and one, which must form a large part of any dietary. Fresh bread contains 30 per cent. of carbon, and $5\frac{3}{4}$ grains of nitrogen in each ounce avoirdupois. Hence, if bread alone were supplied, it would require $26\frac{1}{2}$ ounces to supply the carbon, but it would be deficient by 48 grains in the requisite quantity of nitrogen, and, therefore, an addition of some more highly nitrogenized food would be necessary. Cheese is the best known and most economical nitrogenous food, and 23 ounces of fresh bread with $2\frac{1}{2}$ ounces of cheese would supply the required amount of both carbon and nitrogen; and there can be no doubt that these, with the addition of water, would support the system for a lengthened period. This is a very different amount of food from that supplied in prisons, in the defective first-class, and excessive fifth-class dietaries.

It is now right to mention that the amount of carbon is not the whole amount of heat-generating food which is necessary to the system, since it has been tolerably well established on the lower animals, that there must be a combination of oxygen with hydrogen, and as well of oxygen with carbon, in the system, and hence that hydrogen in food, as well as oxygen, must be supplied. I cannot enter into this question, since my experiments on the total quantity of oxygen consumed are not completed; but, whilst recollecting the hydrogen which is contained in both starch and fat, in addition to the carbon now under discussion, and also the small proportion of oxygen which could not be accounted for by the carbonic acid in the

higher animals, it might be right to admit that some small addition to the above-mentioned quantities should be made; I cannot, however, further refer to it.

Having established the above as the basis dietary, or the quantity of food which must be supplied in a state of idleness, we may vary the articles of food, and yet retain the same nutritive values, by attention to the following table, which has been in part compiled from Professor Playfair's data:—

	Parts of various Substances equal (in Carbon) to 10 parts of fresh Bread.	Grains of Nitrogen per Ounce.	Cost per Pound, Oct. 1858, Coldbath Fields.	
			s.	*d.*
Bread, ...	. . . . .	5¾	0	1½
Wheaten flour, . .	8	7¾	0	1¼
Peas, ...	8	15¾	0	1½
Rice, ...	8	4⅓	0	1½
Oatmeal, ...	7½	8¾	0	1½
Scotch barley, . .	. . . . .	. .	0	1⅜
Molasses, ...	. . . . .	. .	0	2
Meat, fresh, . . .	10	8¾	0	4½
Cocoa, ...	5	8¾	1	1½
Potatoes, ...	0⅓	1¼	0	0¾
Suet or butter, . .	4½			
Sugar, ...	7½	. .	0	4½
Indian corn, . . .	7½	7¾		
Cheese, ...	8	19½	0	6

Thus, in reference to the carbon alone, 1 ounce of suet or pure butter is equal to 2¼ ounces of bread; 1 ounce of sugar, oatmeal, and Indian corn, to 1⅓ ounces of bread; 1 ounce of wheat flour, rice, peas, and cheese, to 1¼ ounces of bread; 1 ounce of fresh meat, or 2 ounces of cocoa, are equal to 1 ounce of bread; whilst it requires, both in carbon and nitrogen, 3 ounces of potatoes to equal 1 ounce of bread. The amount of nitrogen contained in these various substances varies from 1½ grains per ounce in potatoes to 4⅓ grains in rice; and 7¾ grains in wheat flour to 19½ grains in cheese. Oatmeal, wheat flour, Indian corn, fresh meat, cocoa, and peas are all richer in nitrogen than bread, and that of peas to bread is as 2½ to 1. As most of the articles now mentioned are also richer in carbon, it is evident that, the price being equal, it would be better to substitute them in part or in whole.

In reference to the price, a consideration of great moment in the construction of dietaries, I have added to the table the cost of the articles at Coldbath Fields Prison; but it is needful to state that the authorities grind the corn by prison-labour,

and make the bread which is used in the prison, a plan to be highly recommended to the attention of the visiting justices of all county prisons. The actual cost of excellent bread is $1\frac{1}{12}d.$ per pound, whilst that of flour is $1\frac{1}{4}d.$; of peas, rice, and oatmeal, $1\frac{1}{2}d.$; and of potatoes $\frac{3}{4}d.$ per pound. Hence, of all the farinaceous foods, potatoes is the dearest, viz , $2\frac{1}{2}$ times dearer than bread; whilst peas is by far the cheapest.

Space will not permit me to draw out in detail a scheme of dietary based upon those data, neither is it necessary, since the table will enable any one to vary the articles at his own pleasure. I, however, suggest that oatmeal should enter largely into the dietary (as indeed it does in the Northumberland and Cumberland Gaols), and especially for breakfast, and that cheese should be a constant addition to the supper, whilst at dinner potatoes might be less largely used than at present, and suet, flour, peas, and oatmeal be made into pudding, In reference to fat, I think there can be no doubt, from the abundance of it supplied by nature, as well as our enjoyment of it, that it should enter into all dietaries to the extent of two ounces per day. It is much more difficult to determine how far meat is necessary, in a state of inaction, when enough of other nitrogenous food is supplied; but whilst common experience shows the opinion of the world as to the advantages resulting from its use, we know that agricultural labourers in all countries enjoy a fair state of health, and the longest life, with but a very minimum supply of it. My experiments have shown that all nitrogenous food is "excito-respiratory" in addition to its flesh-forming power, and in this respect it is evident that meat or other nitrogenous food is more necessary for the transformation of starch when the body is perfectly inactive than when a certain amount of exertion is made. Agricultural labourers, who so seldom obtain fresh meat, obtain bacon less rarely, and hence have a certain amount of animal tissue, besides the contained fat.

If two ounces of uncooked meat be added to the above-mentioned quantities of bread and cheese, or their equivalents, there would still be a deficiency in the required amount of nitrogen; and as tea, coffee, beer, and similar nitrogenous articles are properly excluded, it is not easy to supply this deficiency. Milk would, no doubt, be a valuable addition, but, beyond the consideration of cost, it is, doubtless, serviceable to limit its use as far as possible to extra diets, rather than to assimilate prison to home dietary.

I am also desirous of urging the use of unsifted flour, not-

withstanding the prejudice which has arisen against it of late years, since, whilst it is not deficient in carbon, it contains more nitrogen, and, moreover, it acts as an aperient, an action which, within limits, is of great importance to the unoccupied prisoners, and tends more than any other influence, except exercise, to maintain an efficient state of the bodily functions. For the like purpose, an admixture of rye flour is commendable, as in the Continental states. With plenty of good brown bread, made under efficient superintendence, we need fear but little for our prisoners in a state of inaction.

Having thus given the basis dietary suited to all prisons where no labour is enforced, and to prisoners whilst unoccupied in other prisons, I may give, in a few words, the factor which will render it applicable to other conditions.

With the tread-wheel so constructed that the body cannot be held erect, and with the twelve-pound crank used from six to eight hours per day, the quantity of carbon lost by me was fourteen ounces per day. This is represented by $47\frac{1}{2}$ ounces of bread, and the addition to the basis quantity is eight-tenths of that quantity. Hence at rest the quanties are 23 ounces of bread and $2\frac{1}{2}$ ounces of cheese; but with tread-wheel labour, $41\frac{1}{2}$ ounces of bread and $4\frac{1}{2}$ ounces of cheese daily. The latter class of prisoners should be supplied with a large breakfast, and if much meat is given it would be better employed if divided between the breakfast and dinner than with the latter alone.

An estimate of the waste from manufacturing mats, &c., may be made by considering the effect of such defined degrees of exertion as walking at given rates of speed. Walking at 2 miles per hour increases the quantity of carbon $\frac{4}{5}$ths, and at 3 miles per hour, $1\frac{3}{5}$ths. An unoccupied man who saunters about at 2 miles per hour, during 3 hours, walks 1 hour at 3 miles per hour, and stands 2 hours per day, demands an increase in carbon from 8 ounces at rest, to $9\frac{1}{2}$ ounces, or from $26\frac{1}{2}$ ounces to 32 ounces of bread. This dietary would be suited to prisoners engaged in trades and very light manufactures, and the proportionate increase of the basis dietary is $\frac{1}{5}$th.

For the workmen engaged in weaving wide widths of matting, as at Wakefield (where Mr. Milner has shown the insufficiency of their good dietary), and to those condemned to the eight-pound crank, with 7000 revolutions per day, or who occupy several hours per day at the shot-drill, the increase must be $\frac{6}{10}$ths of the basis quantity, and the quantity of bread be increased to $42\frac{3}{4}$ ounces.

These four classes would meet the wants of all our gaols, with their present absurd diversity of punishments, and the

daily quantities are as follows, varying with the amount of exertion :—

With rest, ...	23 oz.	of bread,	$2\frac{1}{2}$ oz.	of cheese.
Light trades, ...	$27\frac{1}{2}$	„	3	„
Laborious trades, and light crank, ...	$36\frac{3}{4}$	„	4	„
Full tread-wheel and heavy crank, ...	$41\frac{1}{2}$	„	$4\frac{1}{2}$	„

The equivalent values of other foods may be obtained from the table.

I propose to arrest my remarks at this point; but I would ask men of science and philanthropists to consider how far it is beneficial, either to the prisoners or the country, that so much animal force should be so uselessly expended, seeing that with increased labour there must be increased food and increased cost, or the health and strength of the prisoners must be allowed to diminish. It is also time that an opinion should be arrived at as to the relative advantages of the very different modes of carrying out hard-labour sentences, as at Reading, with its mental instruction; at Wakefield, with its manufactures; at Leicester, with its tread-wheel; and at the New Bailey, Salford, with its admixture of punishments. I also venture to suggest that the present diversity in the treatment of our criminals is highly reprehensible; and that there are no sufficient grounds for the great distinctions made between the dietaries of county and convict gaols, both at home and abroad.

Art. XIV.—*Notes on Diphtheria.* By Walter Bernard, Licentiate of the King and Queen's College of Physicians in Ireland, Dungannon.

Diphtheria being an epidemic disease, of which so little is as yet known, want of uniformity of character in the reported cases must be my apology for trespassing on the pages of the Dublin Quarterly Journal with a brief account of the two following cases, which may assist, in some measure, to mark out the various stages and complications of the disease.

On the 13th of December last I was called to see Master A. H., aged three years, who had been feverish for two days previously. On inspection, I perceived that the inside of the lips and cheeks was dotted over with small patches of a light gray exudation, attended with a red, spongy condition of the gums, and a thick, creamy coat on the tongue, with a slate-coloured

streak down its centre. There was no acute fever; constitutional symptoms slight; the appetite and strength being little deranged.

16th. Subacute fever; appetite and strength failing.

17th. To my surprise I found that fever of the asthenic type had set in, and almost entire prostration of the vital powers. The exudation had spread over the palatine vault, tonsils, and pharynx, and assumed a more compact, curd-like appearance.

18th. The lymph material had increased circumferentially, and by additional layers; the nose was full and tumid; there was a slight acrid discharge from the nostrils, and fœtor of the breath. The glands about the neck and throat had become swollen and tender; the neck increased in volume from effusion of serum into the areolar tissue; breathing hurried; prostration extreme.

19th. Pulse steady and full; tongue beginning to clean from the tip and edges.

20th. The false membrane began to detach itself irregularly here and there, leaving the mucous surface polished, and of a bright red colour.

23rd. Entire separation took place, with the exception of a few small patches on the tonsils; the general health and appetite improved rapidly from the 19th. I may add that throughout the attack the urine was free, and the bowels regular.

Treatment.—At the onset a mercurial purgative; the free application of the solid stick of nitrate of silver daily to the patches; a blister from ear to ear, one inch and a half in breadth, followed by relays of linseed poultices; a tablespoonful of the ferro-chloride mixture every third hour. The strength was chiefly maintained by a liberal supply of beef-tea and wine. Due care was taken not to poison the patient with his own exhalations, by the abundant use of chlorides, cleanliness, and free ventilation.

On my first visit the aspect of the patches seemed like the mild form of acute gangrenous stomatitis, and might be confounded with it; differing, however, by the absence of a breach of the mucous surface, the dark gray gangrenous slough, the loss of substance, and the presence of effusion into the areolar tissue of the neck; the child also having been perfectly healthy up to the time of the attack, and strict attention paid to hygienic means. Scarlatina and epidemic catarrh prevailed in the neighbourhood at the time: a similarity of cause may have produced these different affections.

Other cases reported as diphtheria (some fatal) occurred in

this and the adjoining counties, none of which, however, came under my observation.

Since I wrote the foregoing I was called, on the 24th January, to see Master J. H., his brother, aged seven years, a precocious child of delicate constitution. The chief features in his case were, that the lymph spots were small and few, confined to the left tonsil and pharynx; rapid and intense prostration; wasting of the whole body, and epigastric tenderness; followed by meningitis of a well-marked type. Having relieved the epigastric tenderness, my attention was chiefly directed to the treatment of the head symptoms, at the same time supporting the strength with beef-tea, jellies, and white wine whey. From the 31st of January to the 6th of February he improved most steadily in every respect: when the debility induced by the diphtheria called into action the subacute variety of hip-joint disease, which, however, is yielding to treatment.

Art. XV.—*On Cancer.* By Maurice Henry Collis, M. B. T.C.D., M. R. I. A., F. R. C. S., Surgeon to the Meath Hospital and County Dublin Infirmary; Examiner in Surgery to the Queen's University in Ireland; and Member of the Council of the Surgical Society.

(*Concluded from* vol. xxvi. p. 268.)

It may be well to examine in what sense the much used phrases of diathesis, blood poisoning, constitutional infection, &c., are applicable to cancer. That they have a certain meaning is, I presume, evident from their general acceptance, but it is surprising how vaguely we are prone to apply them; such terms have a certain convenience when used to conceal our ignorance of the cause and origin of disease, but I fear they often stand in the way of a scientific and accurate search after truth. In the case of cancer this habit of vague generalization has helped to cause many dissimilar growths to be grouped together under one name, or, to speak more correctly, has confounded them as identical with one another and with cancer. It ought not to be a matter of surprise, then, if those who first discovered their dissimilarity should have gone too far in asserting that a certain form of cell-growth was alone characterized by clinical malignancy. Although we now believe that Lebert was wrong in pronouncing the cancer cell as the specific malignant element, because it was the specific cancer element, we cannot be surprised at it;—opinion when gravitating from error often oscillates beyond the middle point where truth is to be found. Lebert's later

writings, I believe, show this to have been the case; and that, while still upholding as strongly as possible the diversity of many cancroid growths from cancer, and each other, he does not now couple clinical malignancy with one growth, to the exclusion of others. I believe that a deeper investigation into the mode of their origin will and does reveal points of analogy as well as of difference between these various growths, which will bring us a step nearer the truth than we have yet attained, and will show a simplicity in the operations of disease running parallel with its extreme multiformity, and analogous to the uniformity and diversity of type in healthy organizations. I think we can see some shadowing forth of a law in all these diseases, which will, some time or other, not only explain their causes as far as they may be explicable, but, perhaps, may also lead us to their cure. I am daily more convinced that we have much more to learn on these subjects than we yet know; that our knowledge of the causes of disease of all kinds is still in its infancy.

Every thinking student of pathology must have been often startled by the analogies which spring up, phantom-like, between two apparently distinct diseases, as his mind may chance to be directed to them at the same time—analogies which sometimes darken, but more frequently throw light upon, their causes or treatment; and so, in studying the group of cancer and cancroid diseases, while the mind may be purposely directed to their differences, with the practical end in view of pointing out or discovering clinical diversities of sign or symptom in each; yet the strong analogies which subsist between them are also forced on the mind, and prevent the mischief which a one-sided view would tend to produce.

Impressed with these thoughts, I shall endeavour to examine into what is meant by the terms above alluded to, such as constitutional infection, blood poisoning, diathesis, &c., as applied to cancer. Similar terms are used in reference to pyemia, syphilis, the exanthemata or other diseases, but we can scarcely suppose in the same sense. Blood poisoning in pyemia implies one of two very different conditions: either the blood is poisoned by the absorption of putrid gases or fluids, the products of decomposed pus; or the formative or organizing power of the blood is altered so that pus is deposited from it in various parts of the body, in place of healthy secretions or exudations. Does anything analogous to either of these conditions exist in the blood of a cancerous patient? If so, does it precede and cause, or does it follow, from the cancerous deposit? Again, constitutional infection, as applied to syphilis,

implies a blood poisoning of so extreme a degree that the blood and all the body of the patient are so altered as to be incapable of healthy action; so much so that the infection is communicable as an hereditary taint. Is this true in any sense, and in what degree in the case of cancer? I do not think it is necessary to discuss the term diathesis; all will admit it to be merely the algebraic sign of an unknown quantity.

To examine the above propositions in order, let us see if there be anything in cancer analogous to the absorption of the decomposed elements of pus into the blood. To this, with much diffidence, I would answer in the negative. As regards the unbroken cancer cell and its nucleus, we have, equally with the pus corpuscle, plain evidence of the impossibility of such an occurrence as their absorption into the general circulation, in the fact of their great size. This renders it impossible for them to enter the capillaries at all, and I think all will allow that it is not probable that they enter the larger vessels except by a breach in the continuity of the latter. Cancer cells, like pus globules, are found in the interior of vessels, but in neither case have they entered the vessels by a process of absorption; nor have we any clear proof as yet that the lining membrane of the bloodvessels has a power of secreting cancer cells similar to what it appears to possess in the case of pus. No doubt, cancer has been found in the interior of bloodvessels in mass, as well as in the form of separate and isolated cells, but in both cases the diseased product has been found to have eroded the vessels, and to have thus got in by producing a breach of continuity.

But it may be said that the decomposed elements of cancer cells may be absorbed, and produce blood-poisoning and propagation of the disease in distant parts. There are two reasons why I cannot accept this proposition, offered, as it is at present, without proof: first, the phenomena of distant infection can be otherwise accounted for; and secondly, the process of decomposition of cancer cells is a chemical process in nowise different from the mode in which the healthy cell structures of the body perish. I have in a former paper spoken of the two-fold manner of their death, either by drying up and splitting into fragments, or by an oily softening and breaking up. We do not find any evidence that these processes are productive of irritation in neighbouring parts, nor can we suppose that the absorption of their chemical elements injures the system generally by assisting in the propagation of the disease.

Blood poisoning, then, as applied to cancer, cannot be said to be proven in the sense of the absorption of the decomposed

cancerous structure, and consequent deterioration of the blood and body generally: those who believe in such a result of cancer have yet to prove their case. But in the other and far different sense in which the term blood poisoning is equally used, it must, I think, be answered that the term is applicable to cancer; and not to cancer only, but to all other diseases in which the formative power or vitality of the lymph is so altered as to develop unhealthy organisms. Whether we look upon cancer as primarily local, or having its origin in the blood, we cannot deny that, so far as the plasma of a cancerous tumour is concerned, it is not only poisoned, but must be capable of poisoning the blood; for let us suppose it local in its origin (as in truth I believe it to be), this unhealthy cell, nourished, let us say, for argument's sake, by healthy lymph, must interchange by endosmose and exosmose with the healthy lymph, and thus impart to it some of its own peculiarity. If the cell be of active growth, rapidly absorbing and returning fluid, its power of poisoning will be rapid, and the lymph in its neighbourhood becomes imbued with its peculiarity, and when it organizes takes the the same form. Meanwhile, the cells get no healthier, for it is a law of growth that the higher organism will impress its stamp on the lower or merely organizable material, without losing any of its own specific character. This law meets us in the exanthemata, in syphilis, and in many processes of health and disease; as long as the cell, whether of lymph, or cancer, or any other, possesses vitality, this process goes on, in some slowly, as in cartilage and in scirrhous cancer cells; in others, rapidly, as in epithelium and encephaloid cells. Rapid growth, however, does not imply a rapid general poisoning, for the local growth, being rapid, draws upon the blood largely for plasma, and gives little to it; nor is the amount of poisonous matter at all in proportion necessarily to its power of development: for example, the smallest quantity of lymph from variola or vaccina will rapidly alter the lymph of the entire blood, and syphilitic and other poisonous fluids produce their specific results when introduced in marvellously small quantities. I think, also, we find that the rapidly growing encephaloid which pushes aside the tissues in its eagerness of growth, and which consumes all the lymph it can get from the blood, is much less prone to poison the distant glands than the slow-growing, irritating scirrhus, which keeps up a constant low inflammation of the lymphatics. But in neither case is the general poisoning at all rapid in cancer, as a rule. The current is rather from the vessels than into them, and the poisonous exosmosis from the cells is expended on the lymph already effused into the tissues

rather than on what is still contained in the vessels. It is when the skin becomes implicated that we find evidence of glandular poisonings in cancer: the skin and lymphatics are so intimately united that the moment the cells shoot into the interstices of the one, the others begin to show signs of irritation; the dense structure of the skin assists the general poisoning also by limiting fresh effusions, and compelling the poison to feed on the healthy natural tissues. Hence, the skin is most implicated in scirrhus of slow growth, and least in rapid encephaloid. Contrast the dense retracted nipple of the one with the pendulous nipple of the other; the skin drawn in, puckered, and condensed by chronic irritation in the one; distended and thinned, but still soft and delicate, in the other.

Reasoning and experience, then, alike teach us that a certain amount of blood poisoning may exist in cancer, but that it does not so exist, as a result from the decomposition of cancer cells; it rather originates in the vital interchange which goes on between the fluids of the body and the cancer cells while still living and active. Nor will this slow and very often limited action of the cells account for the origin of the disease in the least. It explains both the general cachexia which results from extensive cancerous deposits and the somewhat opposite fact of the infrequency of a general outbreak of cancer. A downright poisoning of the blood to the extent of producing cancerous deposits in several parts of the body at the same time is most unusual. This fact, observed and commented on by many, has been read erroneously by some, as if it implied that the cancerous tumour was a kind of reservoir of cells, that its removal generalized the morbid product, and was therefore an improper practice. But I rather think that this rareness of general cancer is to be accounted for, as I have said, by the slowness with which the morbid fluid returns into the blood vessels, and the fact that the lymph which lies free among the tissues in the neighbourhood appropriates it. In admitting, then, that the term blood poisoning has a certain amount of truth as applied to cancer, it must be understood to do so to a limited degree, and as a secondary effect of the disease, not by any means as accounting for its origin.

I have said above that I look on cancer as of local origin. I find the cancer cell always existing as an interstitial body, attributed generally to an injury, and often growing rapidly after fresh violence. These characters it possesses in common with many other cells. The simplest of these is the lymph cell. Between it and the cancer cell there is a wide range of difference, and a comparison of the two extremes would not

show us much in common. But among the intermediate forms of cell growth we find such slight shades of difference that we are ultimately forced to confess that the small lymph cell, with its little nucleus and the comparatively large cancer cell with nucleus larger than the entire lymph cell may have a common origin. I think we may go further, and develop the following law from a comparison of these various cells—namely, that the farther the form of any cell departs from the healthy type, the more malignant is its nature.

The healthy lymph cell rapidly develops itself into a fibre; if it does not possess sufficient vitality to do so, it may be converted in one case into a pus globule, in another into the cell of tubercle, while in other cases it may take on itself an independent activity of growth, and become a fibro-plastic cell or fibre, or a cancer cell, &c. I would here recall the fundamental difference which exists between these cells and epithelial or epidermic cells. The latter are secreted by a membrane, and do not originate as interstitial deposits, though under certain circumstances they may by their presence produce inflammatory effusions, which serve to nourish and extend them. Epithelial cells are not found to take the form of fibres or in any way to imitate the development of the lymph cell; whereas in all the genuine interstitial growths we find this resemblance in form to the various phases of organized lymph, Sometimes the tendency to become a fibre goes no farther than the slight elongation of the cell, so that it becomes oval or oat-shaped. In another form of growth the fibre cell differs in scarcely an appreciable degree from the healthy lymph cell when developed into a fibre. Even in the genuine cancers we find there is a tendency in the cells to develop into caudate or fibre-like forms, often wonderfully similar to the ordinary lymph fibre, though much larger and readily distinguished by their very large nucleus.

Now the simple fibrous tumours which are composed of ordinary fibrous tissue appear to differ from the organized plastic material of chronic inflammations no further than that they possess a sort of independent vitality. They are interstitial deposits of organized lymph, but they have, in addition, a power of drawing fluid material from the blood, and of appropriating it, not merely to the repair of their waste, but to the increase of their bulk. This inherent independence of vitality, or power of appropriation for the purpose of enlargement, seems to be the essential difference between morbid growths or tumours and simple inflammatory exudations. Now, were this tendency merely the result of a constitutional vice (either here-

ditary or acquired), we should expect all inflammatory exudations or infiltrations occurring in the patient to present a similar abnormal structure. If, for example, the cause of cancer be some constitutional tendency to the development of lymph after a certain morbid fashion, we should expect all lymph that became extravasated in such a patient to take on a similar cancerous development. But such is not the case. The wounds of a cancerous patient will heal kindly, and, except they are in the neighbourhood of cancerous matter, they take on no cancerous action, nor is the well-known fact that the bones of cancerous patients sometimes remain ununited, a proof to the contrary; for in most cases of the sort, cancerous degeneration of the bony tissue has preceded, and not resulted from fracture. This independent vitality of tumours, then, is not to be accounted for by referring it to a constitutional tendency; nor, on the other hand, is the special form of morbid product to be accounted for by the local influence of neighbouring forms of healthy tissue; for then we should have the same kind of tumour always occurring in the same situation. The breast, for example, should be the seat of adenoid or chronic mammary tumour only, and cancers, which resemble none of the ordinary constituents of the body, ought not, on this theory, to exist at all.

I have no explanation to offer of the fact that lymph interstitially deposited in an organ will sometimes be absorbed, and sometimes become organized; nor of the fact that in the latter case it may take on one or other of many forms of organization. Nor can I explain how it becomes possessed of an independent vitality, and internal power of growth, but I wish to get rid of erroneous views on the causes, whether remote or proximate, of tumours, views which arise from an imperfect acquaintance with nature, and defective reasoning. It is better for us to stop short where our knowledge ceases than to run on into the realms of speculation. More benefit is derived from one careful examination of a tumour than from all the speculations with which books abound.

To proceed to the treatment of cancer and cancroid, on which its nature and origin must, at least ought, to exercise much influence. It is manifest that epithelioma being in origin an hypertrophy, and only by accident of position an interstitial deposit, should be amenable, as we find it is, to such treatment as will remove the diseased growth completely. The masses of epithelium spring from, and are based on, a secreting surface of skin or mucous membrane. As the base of the epithelial mass extends, so does the membrane; and *vice versâ*, as the membrane is hypertrophied, so does it secrete greater quan-

tities of cells. If caustic be selected to destroy the diseased mass, it must be of a nature to penetrate the convolutions of epithelium, and destroy the morbid surface of integument. This will require powerful and most likely repeated applications of the severer fluid caustics. Any one who has tried to destroy a common wart will know how obstinately it resists all the milder caustics[a]. Even acetic acid is long in penetrating the hard and horny masses of epithelium, though it has a stronger effect on the cell walls than most other substances. I have not much experience of caustics, as I prefer the knife; but in cases where the knife is inadmissible, I have used the muriate of antimony, caustic potash, and sulphuric acid. The first of these is, perhaps, the best in epithelioma of the mucous membranes, as it acts in small quantities, and is not so unpleasantly diffusible. The kali is applicable to the small, hard, and half horny masses which lie on the edge of the lip, if they can be completely burned out by one application of it. Sulphuric acid made into a cream with flour, or, what is perhaps better, with sulphate of zinc, will destroy the masses of epithelium in ulcers of the skin known as chimney-sweeps' cancer. When a comparatively healthy surface is thus obtained, any remaining portions of the disease on the floor of the ulcer or along its margins may be destroyed by a paste of sulphuric acid and saffron or flour, or by the Vienna paste; or, if this be considered too painful, they may be excised

Of the chloride of zinc as a caustic I have no experience. In the majority of cases of epithelioma, free removal by the knife is preferable, as early as possible before the process of ulcerative absorption has made too large a chasm. It may seem at first surprising how large a portion of a lip or cheek may apparently be implicated and require removal, and how readily the chasm is filled by traction on neighbouring parts. If it be remembered, however, that the mass of disease combines a large amount of hypertrophy with more or less ulceration, this will be easily understood. The loss of substance by the operation is always less than it seems, and bears proportion rather to the extent of the ulcerative process than to the apparent mass of disease. We have every reason to be satisfied with the result of early operation in cases of epithelioma of the skin, including the so-called cancers of the lip. Relapse is extremely rare when the disease is fairly removed. I have seen many patients who had been operated on years previously,

[a] Velpeau gives a good *resumé* of the various caustics in his work on Diseases of the Breast.

eight and ten years in some cases, in whom the cicatrix is fine and pliable, and free from any appearance of relapse.

With regard to epithelial disease of the mucous membranes, they appear to be much more rapid in their progress, and, so far, are less easy of complete removal, and more liable to relapse. The moisture of mucous membranes favours cell growth, and, combined with their greater vascularity, will account for this. Ligature of epithelioma, must necessarily be a bad plan of treatment, unless the ligature is capable of completely enclosing and completely strangulating it, for any communication of vessels between the diseased and sound parts, combined with the inflammatory action set up by the ligature, would unquestionably tend to propagate the disease to the sound side of the ligature. This objection would scarcely apply to the écraseur, which removes all it embraces, and leaves no time for an interchange between the healthy and diseased parts. Care should be taken, however, that all the infected parts are included within the chains of écraseurs. It remains only to speak of the actual cautery. This is a most efficient means of removing epithelioma, though only applicable to small buttons, such as spring from the floor of a cicatrizing wound after the removal of the bulk of the disease by some other agent. The cicatrix of a burn is a most unfavourable nidus for the development of this disease. I have never seen epithelioma spring up in such a dense structure. Even when it grows in sound skin beside a cicatrix, the cicatrix will act as a bar to its progress. I have seen the masses of epithelium flattened, and convoluted, and compressed against such a cicatrix, unable to infect it, and removing it by ulcerative absorption with extreme slowness. Bone itself is much more easily absorbed than the cicatrix of a burn; and as the actual cautery gives rise to this dense and tough form of cicatrix, it may be safely employed where it is not objectionable on the score of excessive pain.

The sympathetic enlargement of distant glands is no bar to operation, and is easily distinguished from poisoned infiltration by their even, oval, smooth outline, as contrasted with the nodulated, rough, or globular enlargement of poisonous infiltration; besides, epithelioma seldom infects a distant gland, and only in very advanced stages of the disease. It will poison the submental glands in cancer of the lip or the gland at the angle of the jaw, according as the growth is situated in the centre or angle of the lip; or the disease in the prepuce may poison the glands of the groin when it has existed some time, but the enlargement of distant glands will be found generally to depend on the ulceration of the integument, and not on the hypertrophy of the

cuticle, and it then presents no obstacle to treatment in the way of removal.

When these ulcers are too far gone to admit of removal, a good remedy for their stench and putrid condition will be found in dressing them with dry dressings; poultices and moist applications favour cell growth; and rapid cell growth only spreads the disease, and causes an accumulation of putrid pus and decomposed cells. I accidentally discovered, when testing cells with various reagents, that the dry powder of bitartrate of potash has a remarkable chemical affinity for the contents of these cells, and causes their disorganization most completely. I have since tried it in several cases as a dressing in foul ulcers of various kinds, and find it to surpass my expectations in keeping them clean and free from excessive discharge. In some instances that I have used it, the sore has gathered in and become reduced to less than half its former bulk; this has occurred in more than one case of Jacob's ulcer of the eyelid, and in ulcers of the leg. I do not say that it will cure any of them, but it certainly is of great use as a dressing; it is quite painless, which is of incalculable advantage in cases which require a daily renewal of the application. In cauliflower excrescence of the uterus and villous cancers of the bladder, it might be of great service in diminishing foul and wasting discharges, and so may indirectly aid in prolonging life. In such cases a quantity of it may be suspended in water or other mucilaginous fluids, as it is not ready of solution. In cases of external cancroid ulcers, it is a cleanly and efficient substitute for filthy poultices.

The views which I entertain of the nature of all the infiltrating cancroids, and of cancer, of necessity lead me to the conclusion that the knife is the only absolute remedy for them. Caustics, as producing increased irritation, and consequent effusion of lymph round and in contact with the morbid growth, must lead to the spread of the disease into parts previously sound; the more so as they are seldom used in small tumours, and in large tumours cannot be employed in quantity or concentration sufficient to destroy the entire mass as with a blow, before the vascular excitement they call forth sends on the germs of disease in widening circles. As palliatives they may be of use in destroying for a time a portion of a tumour which it is not advisable to cut away; though more painful than the knife, they are safer when large fungating masses have to be removed, because they give rise to less hemorrhage; but they can never eradicate the last germ of existing disease with the certainty of the knife, and the cicatrix which they give rise to

is a favourite nidus for the deposit of fresh cells. The only remedy for cancer, as far as we at present know, is the knife, used as early as possible in every case in which even a doubtful tumour, however small, gives sign of growth. I have, however, known cancers of the breast to remain dormant for years, and then, on receipt of injury, suddenly to spring into active vitality, and the knowledge of this fact may give ground for doubt as to the fit practice in the small quiescent tumour. In such cases it is best to leave the decision to the patient or her friends, after fully acquainting them with all risks. The surgeon should never press an operation unless it should be absolutely essential, and then he is better able to urge it with all authority.

The cases in which operation can reasonably be expected to effect a cure are unfortunately few. The rapid growing encephaloid or soft cancer, which pushes aside the tissues, and thins the skin to bursting before it implicates it, or irritates a gland, is the most favourable of all cancers for permanent success. Rapid or acute cancer in the old does not come under this rule: it quickly infiltrates all parts around it, and, having no sort of cyst, is impossible to isolate. Besides, it wears the patient away with fearful rapidity, and often kills him with sheer pain before it ulcerates. Its seat is often in the parotid region and internal organs.

Once the extremely acute type is passed, cancer ceases to have even a false cyst; small cancers, however, may be found, if not quite rolling among the tissues, still attached, but loosely, by roots of no great length or number, and such may be readily removed, and with a prospect of success, if the incision be a wide one. Beyond these, the cases for a favourable prognosis are few. Scirrhus for a long time enjoyed the credit of being the safest to remove. This grave error, by causing relapse and disappointment to be frequent, brought disfavour on operation in general. A sufficiently extensive operation in cases where the skin and deep fascia are not adherent, and where the nipple remains more or less pendulous, will give some chance in a person otherwise in good health; even if the disease returns, it may do so in an internal organ, and may produce its fatal result in a less painful mode. Where the skin is infiltrated and coarse-looking, or set with beads of disseminated cancer, when fibrous bands extend to the axilla, when the glands are involved or the tumour is sessile, operation should not be attempted; local relapse is certain, and rapidly fatal. When the growth is very chronic and small, in a weak, atrophied individual, the chances are that an operation will convert into an active agent of destruction a comparatively harmless tumour,

which, if let alone, would have lasted for years with little local alteration, and little, if any, injury to the patient's life. In these very chronic cases removal does no good, and may do much harm. Something may be done by leeching and cold, to reduce the activity of rapidly growing cancers. Leeches should never be applied to the semi-encysted encephaloid, but lardaceous cancer and infiltrating encephaloid may be kept at bay for a time by them, and by refrigerating lotions.

General treatment, based on pathology, will consist of every means which can improve the quality of the blood: fresh air, nourishing food, and iron tonics, and relief from pain by means of opiates, combined with a calm and cheerful disposition, form about the entire of the general means to be relied on as useful adjuncts to local treatment. Mercury, iodine, and other medicines which deteriorate the blood, especially the fibrinous elements, should be scrupulously avoided.

To those other interstitial growths which cannot be classed as cancer, although they partake of a malignant nature in varying degrees, similar rules will apply. The majority of them are more akin to simple fibrinous formations than to cancer, and are proportionately harmless. They require, however, very careful and complete removal, and, even with the greatest care, will occasionally recur in situ. One or two cases seem to have recurred in distant organs, but they are doubtful, and enough is not known of the group to warrant any dogmatic assertions. Every year reveals to us varieties of organization, but so far all can be referred (by comparison with one another) to the group intermediate between simple fibrous or fibrinous tumours and cancer proper. They have their seat in various parts of the body; parts exposed to injury, as the testis and other glands, are subject to them; and sometimes they appear in parts of the areolar tissue, where no glands exist. Such was the case of Doyle, mentioned in a former paper, from whose foot I removed tumours on four different occasions, finally curing him by making sure of perfect removal; he has now been five years free from relapse; the cicatrix meanwhile pressed on, but not irritated, by the contact of his shoe. I have seen two cases of large fibrinous concretions, which appeared as if successive hemorrhages had occurred into the body of the gland, each effusion of blood becoming organized in a strange, irregular manner, and the whole mass closely resembling, to the unaided eye, a firm encephaloid cancer; these had resulted from injury, and were highly malignant, though not cancers. They exemplify what I mean by saying that these infiltrating growths are various forms of fibrine possessed of independent vitality, and taking

on various forms of development. I think this point of view will be useful in classifying them; they are at present rather heterogeneously mixed up, some with cancer, some with fibrous tumours, and under an infinity of names. I would suggest the name of fibrinous tumours as a good generic name for them. They cannot be all called malignant, for many of them are very harmless if properly handled; nor can they be called fibrous, for many are composed of cells only. It would be well that the name of cancer were confined to those tumours which present the now well known histological elements of cancer.

This cell is not to be recognised in every case without some care. There are many sources of error, as I have already pointed out: bad glasses, imperfect observation, dogmatism of the ignorant (including the best of microscopists), but patience and careful observation will in time establish what it is marvellous that any should deny, viz., a specific structure to diseases of such peculiar aspect.

Meanwhile, let us not confound malignancy and cancer as identical, but remember that the simplest form of tumour is occasionally endowed with destructive powers, and that the term "malignant" only implies a clinical, not a pathological fact. I shall conclude with a repetition of the law which seems to me to govern, as a general rule, all tumours which originate as interstitial or infiltrating deposits of independent vitality, namely:—That they are all modifications of plastic effusions, and that the farther the cell which forms their main element departs from the type of the healthy lymph cell, the more clinically malignant is their aspect.

Art. XVI.—*Case of Infantile Syphilis.* By R. W. O'Donovan, M. R. C. S. L.

June 27, 1857. I attended Mrs. ——, a respectable young woman, in her first confinement, she was fourteen months married; her labour extended over a period of thirteen hours, the first stage being unusually long, but not requiring particular attention; her child was well developed; apparently strong and healthy. Mrs.—— recovered well, and has an abundant secretion of milk.

September 25th. The child was brought to me for advice, having been ill nearly a month; it presented the following symptoms:—General appearance soft and ill-thriven; eyelids red with an encrusted discharge; it snuffles; the lips are chapped and red, particularly the upper lip and the angles of the mouth;

the skin of the scrotum, inside of the thighs, and round the anus is red, glossy, smooth, and cracked in patches; the voice is harsh and rough, as if the fauces were dry or parched; the bowels constantly irritable.

Having seen some cases of syphilis in children, and having a painful conviction that the little sufferer was contaminated with the disease, I felt it my duty to call on the mother and investigate the history of the case, before I prescribed for it. Without acquainting her with my suspicions, I delicately inquired whether she ever had sore throat since her marriage, or any blotches or sores on any part of her body; she assured me she never had any, and attributed her child's illness to cold; I examined her breasts, which were healthy. I also particularly questioned the father, who frankly told me that about six months before his marriage he had an attack of gonorrhœa, but never had a sore on his genitals, or a bubo.

I prescribed the mercury and chalk in small doses twice a day, and black wash to be applied to the scrotum and other excoriated parts, the lips excepted.

From the statement of the parents I conceived some doubt of the correctness of my own opinion, and consulted, by letter, Dr. Montgomery of Dublin, who in the kindest manner gave me the benefit of his scientific research and great practical experience, and strengthened my wavering judgment as to its true syphilitic character.

The child remained under my care for two months on this treatment, gradually improving constitutionally and locally. I then lost sight of it; but in the following January it was brought to me again, suffering from large flat condylomata elevated above the surrounding surface, moist, and secreting a foul discharge, with a pale copper discoloration over the abdomen; its general health was not so much affected as when I first saw it. I again ordered the gray powder in three-grain doses twice a day, the condylomata to be anointed with mild mercurial ointment, and a warm bath to be administered three times a week. Under this treatment the child got quite well, and continues so up to this date.

Is this case to be termed genuine or pseudo syphilis? Either view is accompanied by perplexing anxiety, and calls for serious consideration. That the symptoms *per se* would place it under the former denomination, there can be no question. And, admitting this for argument, we naturally ask how the infant's system became poisoned. The statement of the parents, I believe, is not open to doubt: neither ever had sore, eruption, sore throat, or other symptom of primary or secondary lues.

The child could not have contracted it from the servant, whom I observed to be a healthy young girl, about 15 years old; neither was the servant contaminated by the child, though in constant attendance on it, nor were the mother's nipples affected. Can it be possible that the supposed gonorrhœa of the father consisted of a chancre in the urethra, and that he poisoned the fœtus in utero? Against this supposition, we have his statement, that he was well some months before his marriage, and that he never had a secondary symptom; but if the poison was so derived, is it probable that the mother would have totally escaped, or likely that her first child would have come to maturity?—and it will be borne in mind *she never aborted*. The history of infantile syphilis is opposed to such a possibility.

Is the disease to be looked upon as "pseudo syphilis"? In adult life, no doubt, cases will sometimes present themselves, where the symptoms or appearances will frequently represent the characteristic appearances of secondary symptoms. I was once consulted by a young man of strict veracity, who had excrescences about the anus, and patches of psoriasis over the abdomen and lower extremities, who solemnly assured me he never had a sore, nor could I detect the cicatrix of one, after the most careful examination. He got well under the use of mercurial ointment and iodide of potassium. Yet this was a case which might be recorded as syphilitic; and I am sure many such cases must present themselves to the practical surgeon. Irregularity of diet, with many other obscure causes, vitiated atmosphere, dirty habits, &c., may account for such appearance in the adult; but in the present instance we see an infant at the breast of its own mother presenting a train of symptoms, in perfect grouping, acknowledged by the highest authorities to represent the formidable disease—infantile syphilis.

One consolation, however, is afforded by the result of the treatment, viz., that, whichever name be applied to the disorder, it yields to the steady use of mercury.

Apart from the medical view of the case, another and if possible more important phase presents itself for consideration and reflection. In a medico-legal aspect such a case may become one of great difficulty, in all probability dividing the opinions of the highest authorities. Supposing such a child to be given to nurse, and that in due course these symptoms made their appearance, how would the unfortunate woman escape the unmerited censure of being the means of diffusing with the nutriment of life this hideous disease into the system

of the innocent babe intrusted to her care; and what of the woman herself, intrusted with the nursing of an apparently healthy child? In a little time she becomes the victim of her nursling, and before she has any conception of the fact, becomes the blight of her own family, infecting her husband and future offspring. It would be well for society if this could be considered an ideal view, but recorded cases both at home and on the Continent prove its reality.

Art. XVII.—*Notes on Gunshot Injuries, with a Return and Detail of Cases from the Mutiny in India; and a Description of the Preparations illustrating this subject contained in the Museum at Fort Pitt.* By G. Williamson, Staff-Surgeon.

The wounded of the Cavalry and Infantry of the Line, consequent on the Mutiny in India, who have hitherto arrived in England, having been specially placed under my charge for observation, record, and report, as well as treatment when that was further necessary; and the arrangement of the specimens of gunshot and other injuries incidental to active military life, to be found in the Museum (at Fort Pitt), having at the same time occupied my attention; I am induced to believe, that from these two sources of information opportunities have occurred to me, of which the results may be useful to military medical officers, and not without interest to the profession generally. In the task of classification of those wounds and injuries received in action, I have to acknowledge, with thanks, the assistance of the principal medical officer at Fort Pitt, Inspector-General Taylor, C. B., whose classification[a], proposed during the Crimean War, has been adopted.

The following return, based on that classification, will be found to present a very concise summary of the nature of all the cases of gunshot and other injuries received in the actions occasioned by the Mutiny in India, and will serve at the same time as an index to the method I propose to pursue in submitting the remarks I have to make on the several varieties of gunshot wounds.

The men, on arrival from the long sea voyage from India,

[a] A Classification of Wounds and Injuries received in action, proposed for use in Military Hospitals, by J. R. Taylor, C. B., Deputy Inspector-General, Camp before Sebastopol, June 25, 1856.

had recovered their general health, and the greater number of them had their wounds healed.

The tabular form, completed and closed up to the 31st of March, 1859, shows that the total number wounded which had arrived up to this date was 603; of these, 193 have been sent to duty; 67 to modified duty[a]; 263 invalided; 7 died; and 73 remain undisposed of.

Of the fatal cases since landing in England, 1 was a case of gunshot wound of the head,—cause of death, chronic hepatitis and ascites; 2 were cases of perforating gunshot wound of the lung,—1 of which died of gangrene of the opposite lung, and 1 of phthisis; 1 case of partial fracture of the humerus,—cause of death, pyemia; 1 case of compound comminuted fracture of the femur, ball lodged between the ends of the united fracture,—cause of death, chronic dysentery; 1 case of amputation of the arm,—death from gangrene of the stump; 1 case of amputation at the middle of the thigh,—cause of death, necrosis and exhaustion. Besides these, 1 case (an artilleryman) died at Gravesend, from gunshot fracture of the tibia, followed by sloughing, but not included in the return.

Descriptive Numerical Return *of Wounds and Injuries received in Action during the Mutiny in India, and the Sufferers from which were landed in England, at Fort Pitt, up to the* 31*st March,* 1859.

Classification and Specification of Wounds and Injuries.	Landed at Gravesend.	Discharged to Duty.	Discharged to Modified Duty.	Invalided.	Died.	Remaining undisposed.
1. Gunshot Wounds of the Head:—						
1. Contusions and simple flesh-wounds of the scalp, ...	2	2				
2. With contusion or fracture of the cranium, without depression, ...	5	3	. .	2		
3. Ditto, with depression, or displacement of both tables, ...	8	2	1	3	1	1
Total, . . .	15	7	1	5	1	1

[a] An order, dated 20th August, 1858, was received from the Assistant Adjutant-General, stating that men who had been wounded, and so far disabled as to be unfit for the active duties of a soldier, might still be very efficient as orderlies, messengers, clerks, &c., and were to be retained in the service for that purpose.

Classification and Specification of Wounds and Injuries.	Landed at Gravesend.	Discharged to Duty.	Discharged to Modified Duty.	Invalided.	Died.	Remaining undisposed.
2. Gunshot Wounds of the Face :—						
1. Simple flesh contusions and wounds, .	1	. .	. .	1		
2. Penetrating, perforating, or lacerating the bony structures, without lesion of important organs, ...	3	3				
3. Ditto, with lesion of the eye, ...	12	3	. .	7	. .	2
4. Ditto, with fracture of the lower jaw,	6	2	1	3		
Total, . . .	22	8	1	11	. .	2
3. Gunshot Wounds of the Neck :—						
1. Simple flesh contusions and wounds, .	7	6	. .	. .	. .	1
4. Gunshot Wounds of the Chest :—						
1. Simple flesh contusions and wounds, .	5	5				
2. With injury of bony or cartilaginous parietes, without lesion of contents, .	3	2	. .	1		
3. With lesion of contents by contusion, or with non-penetrating wound, . . .	2	2				
5. Perforating contents, ...	9	5	1	1	2	
Total, . . .	19	14	1	2	2	
5. Gunshot Wounds of the Abdomen :—						
1. Simple flesh contusions and wounds, .	4	4				
2. Contusion, or non-penetrating wound, with lesion of stomach, ...	2	2				
3. Penetrating or perforating, with lesion of intestine, ...	2	1	. .	. .	. .	1
Total, . . .	8	7	. .	. .	. .	1
6. Gunshot Wounds of Back and Spine :—						
1. Simple flesh contusions and wounds, .	3	2	. .	. .	. .	1
2. With fracture of vertebræ, without lesion of spinal cord, ...	6	2	. .	2	. .	2
Total, . . .	9	4	. .	2	. .	3
7. Gunshot Contusions and Wounds of the Perineum and Genital and Urinary Organs, not being at the same time Wounds of the Peritoneum, ...	3	2	. .	. .	. .	1
8. Gunshot Wounds of the Upper Extremities:—						
1. Simple flesh contusions and wounds, slight, ...	39	30	6	6	. .	5
,, ,, severe,	8					
2. With contusion and partial fracture of long bones, including fracture of the clavicle and scapula, ...	30	13	4	5	1	7
3. Simple fracture of long bones by contusion from round shot, ...	2	. .	. .	2		
Forward,	79	43	10	13	1	12

Classification and Specification of Wounds and Injuries.	Landed at Gravesend.	Discharged to Duty.	Discharged to Modified Duty.	Invalided.	Died.	Remaining undisposed.
Brought forward,	79	43	10	13	1	12
8. Gunshot Wounds of the Upper Extremities:—						
4. With compound fracture of humerus, .	17	. .	3	13	. .	1
„ „ radius, ...	18	1	2	14	. .	1
„ „ ulna, ...	7	2	1	3	. .	1
„ „ ulna and radius,	3	1	. .	2		
5. Penetrating, perforating, or lacerating the several structures of the carpus and metacarpus, ...	26	5	7	13	. .	1
6. Dividing or lacerating the structures of the fingers and thumbs, ...	9	4	. .	2	. .	3
Total, . . .	159	56	23	60	1	19
9. Gunshot Wounds of the Lower Extremities:—						
1. Simple flesh contusions and wounds, slight, ...	87	63	6	13	. .	18
„ „ severe,	13					
2. With contusion and partial fracture of long bones, or of the bones of the pelvis in their relation to the lower extremities, ...	28	8	4	10	. .	6
4. With compound fracture of femur, . .	8	. .	2	5	1	
„ „ tibia only, . .	6	. .	1	5		
„ „ fibula only, . .	4	3	. .	1		
„ „ tibia and fibula,	2	. .	. .	2		
5. Penetrating, perforating, or lacerating the several structures of the tarsus and metatarsus, ...	13	4	2	5	. .	2
6. Dividing or lacerating the structure of the toes, ...	1	. .	1			
Total, . . .	162	78	16	41	1	26
10. Gunshot Wounds with direct penetration or perforation of the larger Joints, with Fracture of Bone, ...	8	. .	. .	5	. .	3
„ „ without Fracture,	1	. .	. .	1		
Total, . . .	9	. .	. .	6	. .	3
11. Gunshot Wounds with direct Injury of large Nerves, not being at the same time Cases of Compound Fracture, ...	6	. .	. .	3	. .	3
12. Sword and Lance Wounds, ...	12	5	1	6		
13. Bayonet Wounds, ...	2	1	. .	. .	. .	1
14. Miscellaneous Wounds and Injuries received in Action, ...	9	2	1	3	. .	3
Total Wounds and Injuries received in Action,	442	190	44	139	5	64

RETURN *of Capital Operations.*

Description of Operation.	Landed at Gravesend.	Discharged to Duty.	Discharged to Modified Duty.	Invalided.	Died.	Remaining undisposed.
AMPUTATIONS.						
Upper extremities.						
Shoulder-joint,	6	..	..	6		
Arm,	46	..	3	40	1	2
Forearm,	19	..	1	17	..	1
Thumbs,	12	1	5	5	..	1
Fingers,	41	1	12	26	..	2
Lower Extremities.						
Thigh, at upper third,	1	..	..	1		
,, middle third,	10	..	..	8	1	1
Leg,	18	..	..	17	..	1
Ankle-joint,	1	..	..	1		
Medio-tarsus,	2	..	..	2		
Toes,	2	1	..	..	..	1
Total,	158	3	21	123	2	9
EXCISIONS.						
Upper Extremities.						
Shoulder-joint,	1	..	1			
Elbow-joint.	2	..	2			
Total,	3	..	3			
LIGATURE OF ARTERIES, INCLUDED UNDER OTHER HEADS.						
Brachial,	1					
Radial,	1					
Post Tibial,	1					
Total,	3					
Total Amputations and Excisions,	161	3	23	124	2	9
Total Wounds and Injuries received in Action,	442	190	44	139	5	64
Total Wounded landed at Gravesend,	603	193	67	263	7	73

This is probably nearly the total number that will arrive from the Mutiny in India; only a very few more can now be expected.

CLASS I.—GUNSHOT WOUNDS OF THE HEAD.

DIVISION 1.— *Contusions and simple Flesh Wounds of the Scalp.*

2 were admitted, and were sent to duty.

Division 2.— *With Contusion or Fracture of the Cranium, without Depression.*

5 were admitted, of whom 3 were sent to duty, and 2 invalided for other diseases. In all of them, small portions of the external tables of the skull came away, necrosed. The scalp was not adherent to the bone in any of them.

The brain and meninges appear readily to support loss of bone by caries and necrosis, and to accommodate themselves to a denudation of osseous covering, which takes place gradually; whilst forcible removal by gunshot injury and operation is more generally resented.

The following cases are good examples of this tolerance of loss of bone caused by necrosis.

No. 2895. Three portions of necrosed parietal bone; the sequestra embrace the entire thickness of the bone. The number of square inches of bone removed is about 5½ inches; they were taken from the superior and posterior angles of both parietal bones. See Plate VI., fig. 1.

From Thomas Walker, 95th Regiment. This is an example of extensive contusion from gunshot wound of the vertex, followed by necrosis, and ultimate recovery, without the use of the trephine at any stage during the treatment.

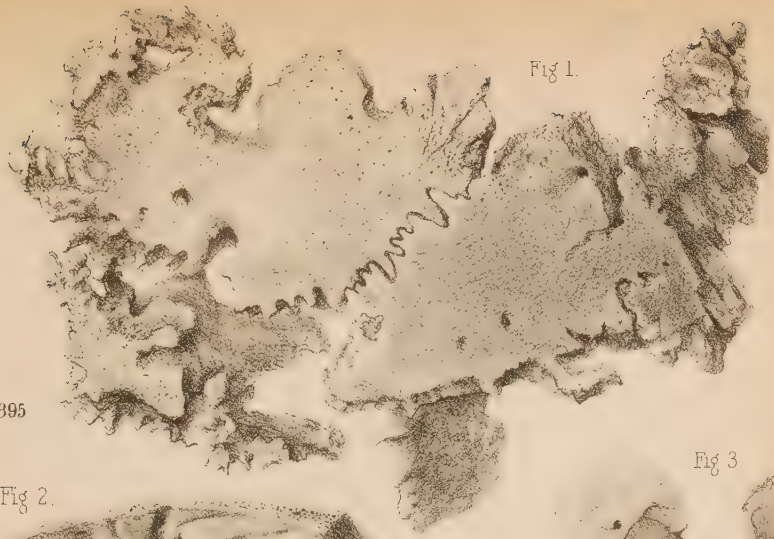
The following preparation from Private G. Bookland, 23rd Regiment, is a case of contusion from a portion of shell without any external wound. Eight months after the injury he was insensible for twenty-one days, but gradually recovered consciousness. The trephine was, however, ultimately applied over the vertex, and the outer table, with portions of the internal table, were removed, and a large quantity of matter was evacuated. The patient recovered.

No. 2896. A large sequestrum, about six inches in diameter, composed almost entirely of the external table of both parietal bones. There are only two small portions, which include both tables. There is an opening in the bone made by the trephine for the evacuation of matter.

No. 3626. Necrosed portions of the bones of the cranium, about two inches in length, and one and a half in breath, consisting of the whole thickness of the skull; the lambdoidal suture runs through its centre. The piece is composed of part of the occipital and part of the parietal bones. There are also two smaller portions: one of them is of the whole thickness, and the other of the outer table only. From M'Gifford; an Indian case.

No. 2910. This cranium shows large irregular depressions and various degrees of deficiency of its parietes, in some places

Fig 1.



2895

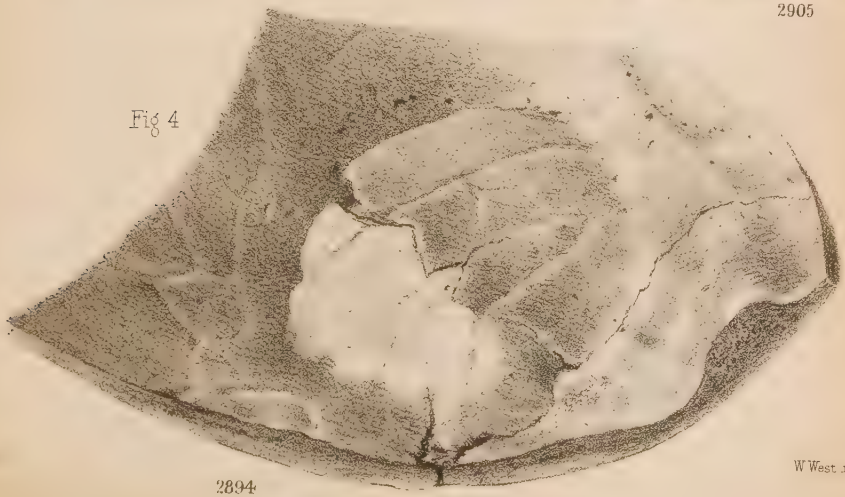
Fig 2.

2885

Fig 3

2905

Fig 4



2894

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comprehending both tables, and in others the external only, and chiefly affecting the left side. The exposed surface of the inner table is quite smooth and compact, as well as the margins of the depressions.

This was the effect of various exfoliations succeeding to a sabre wound of the left parietal bone. The patient was an African negro, a maniac, with occasional violent paroxysms. Disease of four years' duration.

I may also mention the following case, although it was not the result of gunshot wound[a]:—

No. 3176. A cast in wax exhibiting a greater extent of disease affecting the bones of the cranium than perhaps any other case on record, without in any way producing injury to the general health or cerebral functions. The greater portion of the vault of the skull has been removed, and there does not appear to have been the least reproduction of new bone; still, the brain in this case, when last examined by me, was, to a great extent, protected by the effusion of fibrinous matter and consolidation of parts, so as at some places to prevent the pulsation of the brain from being felt,—as has been more fully insisted upon under Division 3.

The disease, necrosis and caries, commenced in T. Blackman, a sailor, in 1845, the result of a fall on board ship. He is now, 1859, in robust health, suffering but little inconvenience from the extent of disease. He is at present an orderly in the Melville Hospital, Chatham[b].

Fracture of the inner or vitreous table of the skull, without fracture or depression of the outer, is of very rare occurrence; still, such an accident may take place, as the following case shows[c]:—

This case proved fatal from compression of the cerebral substance. The question arises,—would this compression have been relieved by the operation of trephining. I believe not, and for the following reasons: first, that the compressing medium was not a fluid which might have escaped through an aperture in the cranium, but coagulated blood; and, secondly, to have operated, and punctured the dura mater when this membrane was in a state of inflammation, would have greatly

[a] This case has been described by Dr. Drummond, D. I. G.

[b] Every case here recorded is the result of a gunshot wound, except when stated to the contrary. The descriptions of the preparations are in general alone given, with a short notice of the result of the case: reference can be made, when required, for further details to the Museum Catalogue.

[c] See the remarks on this subject in Mr. Guthrie's Commentaries, paragraph 262, Lecture xviii.; and Hennen's Military Surgery, p. 326, last edition, 1829.

increased the chances of a fatal issue. The case is interesting, as showing an injury of the internal table of the skull, unconnected with any lesion of the external, and produced by a ball whose conical shape and sharp apex would have led one to expect quite the opposite injury, viz., fracture of the external table and uninjured internal.

May we not also suspect that other cases of this description of fracture have occurred, and have not been observed on post-mortem examination, as took place in this instance, the fissure not being remarked until the calvarium was macerated.

No. 2893.—Calvarium showing a distinct fissure, limited to the internal table, running parallel to the course which the ball had taken, with commencing necrosis. Death in thirteen days after the receipt of the wound.—*Donor, Mr. Cowan, Assistant Surgeon, 55th Regiment.*

Private James Burke, 55th Regiment, aged 19, walked home from the trenches, and was admitted into hospital Aug. 24, 1855. He said that when at the rear a musket-ball, which he found afterwards, struck him on the head. On examination a distinct linear slit, about three inches long, and running parallel with the axis of the brain, was observed situated over the upper surface of the right parietal bone. On introducing the finger, the bone was found quite bare, but no fracture or depression could be discovered.

There were no general symptoms of any serious injury of the head. The head was ordered to be shaved, and cold water dressing applied.

August 29th. Had been progressing favourably until this evening, when the whole scalp was observed to be swollen, but not at all reddened. The œdema was greatest on the right side of the head and face. The edges of the wound looked unhealthy and green, and there was a peculiar smell from the wound; he complained of a want of power in his left arm; the muscles of the face were slightly twisted towards the right side; he could move his legs freely; a crucial incision was made through the wound, the flaps retracted, and the bone carefully examined.

No injury of its intimate structure could be detected, but a distinct black line marked the course of the ball; the pulse was small and weak; numerous free incisions were made here and there over the swollen scalp; from these wounds a great deal of serum escaped.

August 30th. Symptoms of hemiplegia were more distinct; œdema of the scalp quite gone; wound looks more healthy; the bone appeared dead.

September 5th. Had one slight convulsion this morning; respiration decidedly more hurried; in consultation no operation was deemed advisable; had been put under the influence of mercurials.

September 6th. Was much weaker; respiration decidedly more hurried; has had another convulsion; died comatose in the evening.

Post-mortem Examination, eight hours after death.—Calvarium firmly adherent beneath the seat of this injury. On removing it, a false membrane was observed on the dura mater, corresponding exactly to the parietal protuberance, and measuring about two inches in diameter; vessels of dura mater and pia mater congested; underneath the dura mater, at the spot to which the false membrane was adherent, was a large clot of coagulated blood, of the size of a walnut, distinctly circumscribed, and extending in depth to the roof of the lateral ventricle of the same hemisphere. Portions of this clot were degenerated into a reddish grumous matter, possessing no consistence. The cerebral substance around was softened; the other hemisphere of brain was quite healthy; no effusion in either of the ventricles; the internal aspect of the calvarium *seemed at first quite sound*, but after the bone was macerated, a distinct fissure, limited to the internal table, running parallel to the course of the ball, and about half an inch in length, was perceived; the other organs of the body were healthy.

Division 3.—*With Contusion or Fracture of the Cranium, with Depression or Displacement of both Tables.*

Eight cases of this description of fracture arrived from India, and are good examples of fracture of the cranium, and displacement of both tables, with exposure and probable injury to the dura mater. In all of them there was a depressed and generally an adherent cicatrix, which plainly showed that there had been extensive injury and loss of bone, but in none of the cases, on their examination at Fort Pitt, about twelve months after the receipt of the wound, could the pulsation of the brain be felt, the parts having had time to contract and become consolidated by the effusion of a strong fibrous substance.

The size and extent of the depression in the bone, or certain sensorial symptoms remaining, were sufficient evidence that the contents of the cranium had been exposed. It is well known that the bones of the cranium have very little power of repairing injuries inflicted in their continuity by throwing out new osseous matter, but it does not appear to

have been noticed or insisted on, that nature seems to make up for this, by the gradual contraction and filling up of the loss of substance by the deposition of fibrous matter and the gradual contraction and consolidation of the injured parts, so as to effectually close in and protect the brain. This process is well exemplified in some of the cases of gunshot wounds that have arrived from India.

Besides these cases, Dr. Smith, Assistant Surgeon, 9th Lancers, who served with the army at the siege of Delhi, informed me that Captain R. of the Carbineers, and Captain E. of the 60th Rifles, both now in England, are instances of the reparative process just mentioned.

The dura mater was more or less exposed, and the pulsation of the brain visible in both these officers, but in neither, for some months past, has the pulsation been observable, on account of the effusion of fibrous matter and gradual contraction and consolidation of the perforated parts.

In several instances perfectly loose and displaced pieces of bone appear to have been removed, but in none of the cases is there any evidence or even suspicion of trephining having been performed.

After removing any loose or detached portions of bone, the expectant prophylactic treatment seems to be the one usually followed in the present day, and considered to be the most successful.

Nos. 2884, 2885, 2886, 2894, are good examples of this kind of fracture, showing the appearance of parts some considerable time after the receipt of the wound, as also those cases from India of recovery from this injury without the use of the trephine.

With regard to the mode of dressing in gunshot wounds of the head, a piece of fine wet linen is first applied, which adheres to the wound, and should not be frequently removed. Over this, Stromeyer recommends that a net, made for the purpose, should be placed, so as to retain the dressing, and the cold applications are to be made through the net. Patients labouring under wounds of the head are frequently so restless that the wet lint is quickly tossed off, so that the suggestion of Stromeyer appears to be worthy of being generally adopted.

93rd Regt.—Private Jas. Campbell, aged 19.—Wounded at Lucknow, 16th November, 1857, by a musket-ball, which struck him in the centre of the forehead close to the root of the hair, and caused a compound comminuted fracture of the frontal bone; several pieces of bone have come away.

July 10, 1858. The wound is now healed; there is a depres-

sion at the seat of injury, about the size of a cherry, where all the tables of the skull appear to be removed, although the pulsation of the brain cannot be felt, and he complains of severe pain in the head. The man states that the ball is still in the head, and that the medical officers in India inserted the probe for several inches along the inner surface of the bone, and found the ball, but could not extract it.

Invalided, 9th August, 1858.

64th Regiment.—Private Matthew M'Glasher, aged 39, twenty-two years' service.

Wounded on the 12th of August, 1857, by a portion of shell at the storming of Bassack Gungee in Oude; it struck him on the upper part of the left side of the forehead, at the upper and outer angle of the frontal bone, a portion of which was taken away two days after the wound.

June 11, 1858. There are now two long cicatrices leading down to a deep depression capable of holding a marble, resulting from the loss of apparently all the tables of the skull, although the pulsation of the brain cannot be felt. He is in good health, and free from headach, except when he exposes himself to the sun, or stoops, &c.

September 3, 1858. Was sent to modified duty.

3rd Battn. R. B.—Private Charles Brown. Wounded at Cawnpore, December 6, 1857, by a musket-ball between the eyes into the frontal sinus; it was extracted forty-eight hours after. Several pieces of bone have come away.

July 12th. The wound is now nearly closed, there being only a small aperture capable of admitting a probe in the centre of a small depression; bare bone cannot be felt, and there is almost no discharge from it, and he is free from headach.

September 11, 1858. Duty.

37th Regt —Private John M'Gifford.—Wounded 30th July, 1857, by a musket-ball in the head; the ball passed across the upper part of the occiput, severely injuring the bone, which was left quite bare; one large piece of necrosed bone, the whole thickness, came away about three months after. Preparation No. 3626.

July 16, 1858. Wound healed; there is now a deep depression, about three inches in length, across the upper part of the occipital bone; also a deep groove leading down from the centre of the first depression in the form of the letter T; always complains of pains in the head and giddiness.

July 17, 1858. Invalided.

34th Regt.—Private Thomas Long. Wounded at Cawnpore, November 26, 1857, on the left temple, by a piece of shell,

which lacerated the scalp and fractured the outer table of the parietal bone; necrosis ensued, and two small pieces of bone have come away.

July 14, 1858. Wound healed; there is a deep depression, about three inches in length, capable of holding a finger, from loss of the outer table and probable depression of the inner; complains of headach.

August 6, 1858. Invalided.

53rd Regt.—Private John O'Donnell. Wounded at Cawnpore, December 6, 1857, by a musket-ball, which struck him on the head a little to the left of the sagittal suture on the upper and back part of the left parietal bone, close to that suture; ball extracted immediately after; exfoliation of bone took place.

July 13, 1858. Wound healed; there is now a deep depression capable of holding a cherry; the whole thickness of the skull seems to have come away, still the pulsation of the brain cannot be felt; complains of pain in the head; remains undisposed of.

78th Regt.—Private John Halliday received a gunshot wound in the head whilst on service in Oude, in July, 1857. The slugs, or pieces of telegraph wire, with which the wound was inflicted, struck the left parietal bone near the temporal ridge, carrying away a large portion of the scalp and bone; other pieces of bone have been extracted since the receipt of the wound, leaving a large irregular opening about two inches in diameter, through which the brain may be seen pulsating; mental faculties clear; has shown no symptoms of cerebral excitement; the immediate cause of death was chronic hepatitis and ascites.

Died May 29, 1858, at Gravesend.

Post Mortem.—General appearance of Body.—Abdomen and scrotum distended with fluid; both legs and feet very œdematous; a large cicatrix on the left side of the head, about three inches above and behind the ear. *Head.*—On removing the scalp over the wounded part, a small quantity of bloody pus oozed from around a small portion of necrosed bone near the temporal suture, and an opening in the skull was exposed, about the size of a shilling, having a fibrous covering, which alone separated the brain from a thin cicatrix of scalp. The edges of the opening were cartilaginous, and the bone around was rough and irregular; a considerable portion of the adjoining outer table of the skull was apparently carried away at the time he was wounded.

The following specimen shows the result of a severe contusion and fracture from a round shot, with slight depression

of the internal table, five and a half years after the injury, with actual bony union of displaced fragments, and a depression of the contents of the cranium.

No. 2884. Portion of the left parietal bone, showing the result of a gun-shot fracture. A portion of bone exfoliated, and there is now a depression in the external table, and corresponding to this there is a depressed fragment of the internal table, with smooth edges, which is reunited by new bony matter to the old bone.

80th Regiment.—Private William Freeman, aged 35, received a severe contusion of the head by a gunshot, at Ferozeshah, December 22, 1845. When first under notice, there was no disturbance of the sensorial functions, and no breach of the scalp, but great tumefaction of the parts from ecchymosis; suppuration and exfoliation followed. The patient recovered perfectly, and neither then nor afterwards did he appear to have suffered cerebral symptoms in consequence of the wound. Died June 16, 1851, of dysentery.

On post-mortem examination, there was a slight depression in the cerebral substance and membranes of the brain, opposite to the fracture, which had a darker and more vascular appearance than elsewhere, but there was no thickening or trace of lymph.—*Donor, J. R. Taylor, Surgeon, 80th Regt.*

No. 2885.—From Private D. Mullens, 36th Regiment. Shows a depressed fracture of right parietal bone; it projects to a considerable extent internally, and new bone is thrown out around it. The margins of the fracture are smooth and rounded off, and reunited to the old bone.—*Donor, Dr. Russell, Surgeon, 36th Regt.* This is a good example of a considerable depressed fracture, without a single bad symptom, and complete recovery taking place in the short space of a fortnight, without the use of the trephine. See Plate VI., Fig. 2.

No. 2886.—Skull-cap, exhibiting an old reunited fracture of the frontal bone. The inner table is considerably depressed, without corresponding depression of the outer. From a soldier who was wounded in the head in Spain, several years before his death.

This specimen shows well how much the inner table is broken and depressed, compared to the outer, and the appearance after many years.

The following is one of those obscure cases of injury of the head where, immediately after the receipt of the injury, there is no relation between the symptoms developed and the actual extent of the lesion. There must have been a large extravasation of blood in the left hemisphere, immediately on the receipt

of the wound; and yet the patient was able to walk home, a distance of two miles, and not the slightest symptom of paralysis was discoverable.

No. 2888.—Calvarium showing fracture of the left parietal bone, caused by a shell. The depressed portions of bone were removed, and the dura mater punctured to allow purulent matter to escape.—*Donor, Mr. Cowan, Assistant Surgeon, 55th Regiment.*

55th Regiment.—Private D. O'Leary was wounded by a portion of shell at the assault on the Redan, September 8, 1855. From the fact of there not being the slightest general symptoms of compression, cold dressing was applied, and the case minutely watched.

September 11th. Complained of headach and sickness at the stomach. A crucial incision was at once made through the wound; the portion of bone depressed was found to include both tables; that of the external was fractured, while that of the internal was merely depressed. The opening left was about the size of a shilling; the dura mater at once protruded through the aperture, and was punctured, when a reddish, semi-purulent matter escaped. The patient after the operation stated that he felt no pain, and fell into a deep sleep.

14th. Had a convulsive fit, and an excessive action of the muscles of the face and neck.

15th. Complete paralysis of right side; he was insensible; there was a true hernia cerebri.

16th. Died, comatose.

Calvarium firmly adherent; dura mater discoloured, and softened round the seat of injury; the whole of left hemisphere presented one mass of blood, and disorganized cerebral matter.

The next preparation, from Sergeant Shea, 49th Regiment, shows how a patient may recover so far from a depressed and comminuted fracture of the skull as to be able to go about and to all appearance to be in tolerably good health for fifty-four days after the accident, until suddenly seized with convulsions. It is questionable whether this man would have had a better chance had the trephine been applied, and the depressed bone raised, on the receipt of the injury. Subsequently, when the patient was in such good health, there was every prospect of his ultimate recovery, and a surgeon under these circumstances would have had considerable hesitation in recommending an operation, and most likely the patient could not have seen any necessity for having a hole made in his skull.

No. 2894.—Depressed fracture of the posterior part of the

right parietal bone. A sharp margin of the bone must have pressed to a great extent on the dura mater and brain. See Plate VI., Fig. 3.

Out of 15 cases of this description of fracture that occurred in the Crimea, and are recorded in the Museum Catalogue, 4 were not operated on, and, of these, 3 died of abscess of the brain, and 1 recovered. Of 11 operated upon in consequence of symptoms of compression or inflammation, and to remove balls, 4 recovered, and 7 died. In the 15 cases, none of them had head symptoms for some days after being wounded, and none were operated upon before the fourth day, and 1 as late as the twenty-sixth day, and consequently after inflammatory symptoms had shown themselves.

The following are examples of some of the cases where the trephine or Hey's saw was employed.

No. 2900.—Shows the portion removed by the trephine from Private Leary, 18th Regiment.

In this case the fracture was on the right parietal bone, and paralysis of the left side of the face followed, the result of suppuration in the substance of the right hemisphere and membrane of the brain. Trephined four days after he was wounded, and died seven days after the operation.

The following specimen, from Private Conolly, 1st Battalion Rifles, shows a compound comminuted fracture of the frontal bone in the situation of the frontal sinuses. The internal table is considerably more splintered than the outer, and a portion of the bone appears to have been taken away by Hey's saw, to facilitate the removal of the loose pieces of bone.

No. 2892.—Calvarium, showing fracture and depression of the frontal bone, caused by a shell. The fracture is situated on the left side, immediately above the superciliary ridge. Three small pieces of bone were removed from the wound by operation.

No. 2901.—Portion of fractured bone removed by Hey's saw, from Private John Evans, Royal Artillery, who received three small lacerated wounds of the scalp by the blowing up of a magazine, and lay insensible for some time. The wounds healed, and he walked about, apparently well, until about a month after the receipt of the wound, when he became comatose, and on examining the head there appeared a small tumour which presented the characteristics of Potts' puffy tumour.

The symptoms of compression were relieved by operation, and ultimate recovery took place. This preparation and the two following, also No. 2900, were presented by Dr. Jephson, Surgeon, King's Dragoon Guards.

No. 2905.—Shows several large portions of bone removed by the trephine at two applications of the instrument, from Private D. M'Kenzie, 55th Regiment. See Plate VI., Fig. 4.

In this case the symptoms of inflammation of the brain and its membranes set in, and he was trephined on the fourth day after being wounded. A large piece of bone turned edgewise, pressing down the dura mater nearly an inch, required a second application of the trephine; almost instant relief was obtained, and the patient ultimately recovered, and was discharged to duty six weeks after the receipt of the injury.

The following preparation, from Private C. Hancock, 21st Regiment, is an example of a depressed fracture from grape-shot. Inflammatory symptoms, with excruciating pain in the head, and double vision, came on. The trephine was applied on the fifth day after being wounded. Death took place on the sixteenth day.

2898.—Two very large portions of depressed fracture removed by the operation of trephining; thus illustrating the extensive injury inflicted by grape, and the comminuted fracture which is the result.

There are also other preparations in the Museum illustrating the removal or forcible elevation of depressed bone from Collins, Scribbins, Perry, and Perkins, whose cases are detailed in the second volume of the Medical and Surgical History of the British Army in the Crimea.

Division 4.—*Penetrating and perforating the Cranium and its Contents.*

None were admitted under this head from India.

Unfortunately, men's heads are not what they used to be, or modern missiles are more deadly, for recent wars furnish not one exception to the fatal consequences of this species of wounds. Of 91 cases of penetrating and perforating gunshot wounds of the head, admitted into hospital in the Crimea between the 1st April, 1855, and the end of the war, all, without exception, proved fatal. The details of these cases, had they been given, would, however, have been instructive as showing that what are called symptoms of compression occur equally when a portion of cranium and brain is shot away, and the cerebral substance left without cover and support. Mr. Hennen notes the case of a soldier who had nearly half of the roof of the skull blown off by the bursting of a shell, and who had no untoward symptoms till the tenth day, when the brain got into a fungous state, and protruded to a great extent, and

(Mr. Hennen adds in italics) "*he died comatose, with all the symptoms of compression*"[a].

Leaden balls are generally flattened by striking against the bone; sometimes they are cut in two, one portion of which lodges, and the other flies off (2883) at various angles, according to the obliquity of the projectile force, &c., or it may remain under the scalp at the margin of the aperture, while the other portion enters the cranium (2891).

The following is a good example of a perforating gunshot wound of the skull, and shows extremely well the usual characters of the aperture at the entrance and exit of a musket-ball. The outer margin of the entrance of the ball is seen to be smooth, and its inner surface larger and more irregular, and (in this case only slightly) splintered; the internal table being generally splintered to a greater extent than the outer, which is thought to be owing to its being more brittle. The entrance and exit of the ball in this skull show that it is rather produced by the injury proceeding from without inwards, and also from the force of the ball becoming less in passing through the outer table.

No. 2881.—Skull-cap, exhibiting two perforations made by a pistol-ball in the anterior and right side of the frontal bone, and in the posterior part of the left parietal bone. The ball entered in the former situation, and lodged in the latter. The first opening is round and smooth; the second is regular on the inner table, but the outer is torn up to an extent much larger than the ball, which is lodged in front of the splinters. From an officer who was killed in a duel.

The following specimen shows the result of a gunshot fracture, where the patient survived fifteen weeks after the injury. It is to be presumed that any loose splintered pieces of bone (if any existed) were removed by the surgeon, and in all probability other portions were driven into the brain along with the ball; still, the man lived for some time, and became convalescent, with the ball in the lateral ventricle. The internal surface of the bone shows marks of vascular action, with slight osseous deposit around the opening. Three large wormian bones are seen in the preparation, and the gunshot hole is through two of them.

No. 2882.—Portion of a cranium in which is a circular perforation made by a musket-ball at Waterloo. The external margin of the hole is sharp, but the internal is rounded off, and of somewhat larger diameter than the former. The ball lodged

[a] Hennen's Military Surgery, p. 353. Last Edition, 1829.

in the brain. The man, however, became convalescent, until he was attacked with apoplexy fifteen weeks after the wound, and died. The ball was found loose in the lateral ventricles, having shifted its original position.

The next preparation, from Private William Doyle, 19th Regiment, is very interesting, and shows:—1st. That a ball may be cut in two by striking the margin of the fractured bone, and in such a manner as to leave a smooth surface on the ball, as if it had been cut by a sharp instrument, and one portion of bullet to enter the cranium, causing fracture, depression, and splintering of the internal table. 2nd. That in all probability the depressed portion sprung up or was forced up by the motion and resistance caused by the brain. 3rd. That a bullet may enter the cranium without leaving an aperture in the skull, but merely a slight depression and fissure, and leaving no evidence of its having entered the skull during life, until found on post-mortem examination. 4th. That the internal table is more splintered than the external. 5th. That the trephine may be applied without the surgeon being able to take away splintered portions, or to find the ball; in this case, however, there was no evidence of a ball having penetrated. 6th. It also records a wound in the superior longitudinal sinus, with extravasation of blood on the brain. It also shows that the want of an apparently sufficient opening does not prove that the ball has not penetrated and lodged, as the elasticity of bone is such as to diminish the aperture to a considerable extent. The patient survived the wound five or six hours only.

No. 2883.—Lodgment of part of a rifle-ball in the brain, without the usual evidence of a hole in the cranium. Portion of cranium with a depressed fracture by musket-ball. Portion removed by trephine. Portion of rifle-ball found in cerebrum.—*Donor, T. Longmore, Surgeon, 19th Regiment.*

No. 2889.—Calvarium, showing the great extent of injury inflicted on the osseous substance by a conical musket-ball, which perforated the cranium. Not only are both openings joined by a well-defined fissure, but there are cracks radiating in all directions from both wounds.—*Donor, Mr. Cowan, Assistant Surgeon, 55th Regiment.*

This is from Private R. Davis, 55th Regiment. It is curious that portions of the bone large enough to allow of the easy introduction of the finger were removed, which had been driven before the ball and escaped with it through the aperture of exit; only a few loose spiculæ were found in the substance of the brain itself.

The ball in the case of Private Thomas Cain, Rifles, was split, and penetrated the dura mater and brain to the extent of an inch, and was extracted twenty-four days after the wound was received, and the depressed bone was elevated on the twenty-sixth day. There was an extensive abscess in the right lobe of the brain, and pus on the surface and in the ventricles, with fungus preventing the escape of the matter.

No. 2902.—Shows the portions of bone removed by the trephine, and also the musket-ball, split.

The following is a gunshot wound of the face and base of the skull; death ten days after the injury, from hemorrhage from the internal carotid, splinters of bone in the left hemisphere, and suppuration.

No. 2880.—Cranium, exhibiting the track of a musket-ball, from the lower and inner side of the right orbit to the carotid canal, in the petrous portion of the left temporal bone. The internal carotid artery was ruptured, and the ball lay near the opening; spiculæ of bone were entangled in the substance of the left hemisphere of the brain, and suppuration had commenced in this part.

No. 3197.—Cast of the head of a man who received a gunshot wound in the right anterior lobe of the brain when attempting suicide.

From Private Daniel Tonson, 24th Regiment. This is a good example of a gunshot wound penetrating the substance of the brain, with recovery without any operative measures.

SABRE OR BAYONET WOUNDS.

The cut by a sword or by any clean-cutting instrument occasionally produces a mere solution of continuity, and in some cases it causes a fracture or fissure, which extends further than the part actually cut by the sword.

No. 2909.—Calvarium of an officer of the 98th Regiment, who was killed at Peshawur. There is a large, deep cut through the upper part of the right parietal bone, extending into the left; the blow seems to have been from behind, and a second blow, or cut, seems to have taken away a portion of bone immediately below the other. Death 22 days after the injury.

Wounds of the *orbit* are always very dangerous on account of the close proximity of the brain, and are usually produced by any sharp-pointed weapon, such as a bayonet or sword, by a walking-cane or tobacco-pipe, penetrating the thin superior wall of the orbit, and entering the brain, causing inflammation and abscess. The orbital plate of the frontal bone and the ethmoid are very thin and fragile, and the anterior lobes of the

brain can easily be reached either from the nostrils or orbits, and a wound in either of these situations may even take place without exciting the suspicion of the surgeon that any serious injury has been inflicted, until symptoms of inflammation of the brain set in, more especially as the wound externally may appear of a very trivial character, as occurred in the following case:[a]—

No. 2794.—The bones of the face, and a portion of the cranium, with the broken extremity of a cane which had penetrated into the nostril at the left ala of the nose, and entered the inside of the skull immediately below the left optic nerve, carrying before it the left posterior clinoid process.—*Donor, Dr. Anderson, Surgeon, 12th Royal Lancers.*

Trumpeter E. Grainger, 12th Lancers; death two days after the accident.

Class II.—Wounds of the Face.

Division 1.—*Simple Flesh Contusions and Wounds*

Only one was admitted, and was invalided for diarrhœa.

Division 2.—*Penetrating, perforating, or lacerating the Bony Structure, without lesion of important organs.*

Three cases were admitted from India, and were discharged to duty. One was a case of partial fracture of the lower jaw; two of the upper jaw, in one of which the ball made its exit through the palate into the mouth seven weeks after.[a]

No. 2955. Cast of the breech and screw of a fowling-piece which lodged in the forehead and nasal cavities. From an officer, who lived seven years after the accident. The anterior portion of the right hemisphere of the brain rested on the flat part of the breech, and was separated only from it by a false membrane.

Division 3.—*Penetrating, perforating, or lacerating the Bony Structure, with lesion of the Eye.*

12 were admitted from India with lesion of the eye, of which 3 were sent to duty and 7 invalided; 1 was a case of total loss of vision of both eyes; 8 had lost the right eye; and 3 the left; 7 were supplied with artificial eyes. The 3 sent to duty had lost the right eye, and had artificial eyes supplied to them. The injury to the eyes was caused by musket-ball

[a] For a full account of this case, with an illustration, see Dublin Quarterly Journal, vol. xi., p. 347.

in 8 instances, in 2 by a piece of shell, and in 2 by small shot. The musket-ball generally entered the temples, passed in a slanting direction, and made its exit through the eye.

The men supplied with artificial eyes were very much improved in appearance; and the different shades of colours of the iris and sclerotic were so well matched that it was almost impossible to tell the natural from the artificial one : so much was this the case, that the officers, on going down the ranks, were puzzled to know the one from the other; one man, in a drunken spree, had his eye broken to pieces, fortunately for him, without any injury from the broken portions of the artificial eye.

84th Regt.—Private Francis Lyons[a], wounded September 25, 1857, by a musket-ball, which entered the left temple in front of the ear, and passed out through the eye; two pieces of bone were taken away, two hours after, from the aperture of entrance of the ball.

January 11th. The sight of the eye is now entirely destroyed; the eyelid remains entire; there is a hollow in the left temple from the loss of bone and muscle; the wounds are healed; complains of pain in the head. Remains undisposed of.

93rd Regt.—Private Christopher Porter[a], wounded November 16, 1857, at Lucknow, by a small rifle-ball, which entered the left orbit at the side of the nose, and passed across the right orbit, and out about the centre of the right zygoma, destroying the sight of both eyes. The scar of entrance of the ball cannot be detected, but that of exit is evident; there was considerable hemorrhage from the wound.

June 11th. The globes of the eyes are collapsed, and the humours escaped; he has frequently very severe pain in the head, and cannot stand exposure to the sun, or excitement of any kind.

June 24th. Invalided.

64th Regt.—Private Michael Kirwan, wounded August 5, 1857, in Oude, with General Havelock's force, by a piece of shell which struck him on the right side of the head, producing total loss of vision of right eye. The eyeball is collapsed, but the lids remain; the left appears as if threatened with amaurosis from nervous influence, owing to the injury of the right eye; during the slightest exercise or exposure to the sun, he suffers from giddiness and dimness of vision, which compels him to remain quiet. Remains undisposed of.

[a] The cases of Lyons and Porter are mentioned by Assistant-Surgeon Chaumont, 1st Battalion of Rifles, in the Edinburgh Monthly Journal for December, 1858.

90th Regt.—Thomas Gallagher, wounded at Lucknow, November 16, 1857, by a musket-ball, which entered in front of the right ear, and passed out under the eye of the same side, close to the nose. One piece of bone came away from the entrance of the ball.

July 13th. Wound healed; cannot open his mouth to any extent, and has lost the sight of the right eye; the pupil of left is very much dilated, and the eye has an amaurotic appearance, but the ball of the eye is uninjured.

Invalided August 5th.

60th Regt.—Corporal John Jackson, wounded at Delhi, August 2, 1857, by a musket-ball in right eye, which took an unascertained course; there was not much loss of blood, and he was for about five weeks in nearly an unconscious state.

July 20th. Has lost the use of right eye, the humours having escaped; lids not much injured; has occasional headach, and has lost the sense of smell; is otherwise in good health. Was supplied with a glass eye.

July 21st, 1858. Duty.

Division 4.— *With Fracture of the Lower Jaw.*

It is worthy of remark, the frequency of ununited fracture of the lower jaw in these cases of gunshot injury.

This bone is well supplied with blood, so that necrosis to any great extent does not generally follow severe comminution; still, callus is not thrown out so copiously for the repair of fracture as in the long bones of the extremities. Ununited fracture of the lower jaw does not seem to have been of such frequent occurrence amongst the wounded from the Crimea as those from India.

6 were admitted from India with fracture of the lower jaw. Of these, 3 were invalided; two sent to duty, and one to modified duty. Of these 6 cases, three were instances where the fracture still remained ununited, although the fractured ends of the bone were in contact. In one case the ball struck one side of the lower jaw, and was cut out on the opposite side, one month after, fracturing the bone on both sides. In one the ball was cut out from below the tongue. In one case, from a shell wound, there was a double fracture; one on the right side of ramus, and also another, near the symphysis, with great laceration of soft parts and deformity resulting; the first-named fracture remained ununited. In another case there was a double fracture from a musket-ball; the fracture at the entrance of the ball still remains ununited; that at exit has become united. In one case, from round-shot,

the whole of the left ramus of the lower jaw had been extracted at the time, or came away by exfoliation, leaving a large chasm and great deformity on this side of the cheek from laceration of the soft parts. In one case there was a fracture on the left side at the angle of the jaw still ununited.

Attempts were made to excite action in the ends of the bone by forcible rubbing together, and afterwards keeping the two fractured ends at rest by wire round the teeth, and a piece of cork placed between the teeth of the posterior fragment and that of the upper jaw, but without success. It was not thought advisable to try the effects of a seton or other means of inducing the effusion of new bone.

93rd Regt.—Private William Jeffreyes, wounded at Cawnpore, December 1, 1857, by a piece of shell on the right side of the body of the lower jaw. The soft parts were much torn, and the lower edge of the body of the bone was broken to pieces. There was also a vertical fracture of the bone near the symphysis.

July 12th. The first-named fracture is still ununited, and quite movable, and there is a large scar on the chin, opposite to it. There does not appear to be any necrosed pieces of bone coming away; the second fracture has united.

Invalided August 15, 1858.

8th Regt.—Private Edward Sweeny, aged 26, wounded at Delhi, September 14, 1857, by a musket-ball, which entered at the left side of the face, fracturing the lower jaw opposite to the first molar tooth, and passed across to a corresponding part on the opposite side of the lower jaw, where it made its exit. The portion of the symphysis of the lower jaw in front was for about three months quite loose and detached; several pieces of bone came away from the fracture on the left side; none came away from that on the right side, which became united in about three months after.

August 2nd. The fracture on the left side of the lower jaw still remains ununited, and quite movable, but there is no discharge from it; he cannot open his mouth, and his chin is distorted.

August 16th. Invalided.

20th Regt.—Enoch Pinder, aged 22, wounded at Sultanpore, February 23, 1858, by a round-shot on the left side of the lower jaw, fracturing this bone; nearly the whole of the left ramus of the lower jaw had been extracted at the time, or came away by exfoliation; the left shoulder-joint was also wounded by the firelock.

September 26th. Wound still discharging from a small

sinus, and there is a large cicatrix on this side of the face, which shows a deep hollow from the loss of bone. A dentist has made an artificial appliance, with several teeth attached, which fills up the deficient space in the left side of the jaw, and the patient feels considerable advantage from it.

November 3rd. Invalided.

23rd Regt.—Private James Morgan, wounded at Lucknow, March 16, 1858, by a musket-ball, which fractured the left ramus of the lower jaw at its angle; where the ball was extracted, several large pieces of bone have come away.

September 26th. Wounds healed; fracture still ununited.

September 27th. Duty.

Class III.—Gunshot Wounds of the Neck.

Division 1.—*Simple Flesh Wounds and Contusions.*

7 cases were admitted, and 6 were discharged to duty. In one the ball entered close to the thyroid cartilage on the left side, and still remains in, but its position could not be ascertained with certainty. One was a flesh wound on the right of the larynx; ball dropped out. In another case the ball entered external to the right sterno-mastoid, and passed out at the margin of the trapezius, without injuring an important vessel or nerve.

It is remarkable that the large arteries and veins in the neck should escape injury so frequently in gunshot wounds, This may, in some measure, be accounted for by the structures in this region being so loose and movable that they yield or recede before any projectile.

78th Regt.—Private Benjamin Ritchie, wounded at Lucknow, September 25, 1857, by a musket-ball, in the left side of the neck, close to the thyroid cartilage; the ball still remains in, but its position cannot be ascertained with certainty. He spat up blood for some time after.

June 11th. He cannot move his head except to a small extent laterally, and keeps his head bent down upon the chest In consequence of this constrained position, the spinous processes of the fifth and sixth cervical vertebræ project.

June 17th. At Fort Pitt, under the supposition that the ball might possibly be lying embedded in this process, an incision was made downwards to the spinous processes, but no metallic substance could be detected.

August 30, 1858. Duty.

Class IV.—Gunshot Wounds of the Chest.

Division 1.—*Simple Flesh Contusions and Wounds.*

5 were admitted, and discharged to duty.

Division 2.—*With Injury of bony or cartilaginous Parietes, without Lesion of Contents.*

3 were admitted: one was a case of wound by a musket-ball, which struck the ribs on the right side, five inches below the nipple, and passed out a little to the posterior of the entrance. He spat up blood at the time, and frequently afterwards; several pieces of necrosed bone came away from both wounds. He was sent to duty.

The second was a case of wound by a musket-ball in the left breast, injuring the rib; several pieces of bone came away. He was invalided in consequence of impaired breathing.

Division 3.—*With Lesion of Contents by Contusion, or with Non-penetrating Wound.*

Two were admitted: one man was wounded by a round shot in the right breast which fractured the three upper ribs; no external wound. Both were sent to duty.

Division 4.—*Penetrating, and Ball lodged or apparently lodged.*

None admitted.

Division 5.—*Perforating Contents.*

Nine perforating gunshot wounds of the chest arrived from India, of which 5 have been sent to duty; 1 to modified duty; 1 invalided; and 2 died. 7 were wounded on the right side of the chest, and 2 on the left; in 4 instances it is mentioned that air passed out of the wounds of the chest. 8 were wounded by musket-ball, and 1 by grape-shot.

In all these cases there can be little doubt of the lung having been wounded, with, perhaps, the exception of Knox and Farrell. It is also remarkable that so many as five had so far perfectly recovered as to be able to return to duty, and the lung to have been so completely restored that nothing abnormal could be detected, either by percussion or auscultation, along the course of the ball, although it is to be supposed inflammation of the lung and pleural cavity took place to a greater or less extent in all. It is, however, stated that pneumonia occurred only in four instances; in one case there was hernia of the lung.

Out of 106 cases of this description of wound that occurred in the Crimea from the 1st April, 1855, to the end of the war, 82 died, and 24 were invalided or transferred, but it is not stated how many returned to duty. There are, however, the cases of one officer and one soldier detailed of recovery from this injury, and where the lung had perfectly regained its normal functions, one (the officer) returned to duty.

The wounds in all these cases from India were healed, with the exception of three, viz., in that of Doyle, Knox, and Moore. The case of Greenfield is interesting as showing not only a wound of the lung, but also of the œsophagus, recovering and returning to duty.

The two cases which terminated fatally, viz., Doyle and Knox, particularly that of Doyle, is interesting, as furnishing an admirable illustration of a perforating gunshot wound through the lung, the track of the ball still remaining open and fistulous, and being lined by a distinct, firm, false membrane, having numerous bronchial tubes of moderate size entering it; it also shows gangrene taking place in the healthy lung, and the wounded one remaining almost perfectly free from disease.

It is stated in the Report on the Wounded from the Crimea, vol. ii., page 321:—"Occasionally small circumscribed collections of pus took place in the track of the ball, surrounded and cut off from the remainder of the lung by consolidated pulmonary tissue, but in no case did the wounds of the organs remain a fistulous passage."

Private Walter Knox died at Gravesend of phthisis, and an extensive abscess was found extending from the wound near the right nipple to the crest of the ilium, with protrusion of the fractured ends of the ribs. The medical officer who made the post-mortem examination states that there was no communication between the cavity of the thorax and the wound; and that there was no cicatrix nor trace of injury to the lung in the position of the wound. But it appears that as the fractured ends of the ribs and the points of the false ribs protruded from the wound, the pleura and lung itself could hardly have escaped injury. This case might, perhaps, have been more properly placed under Division 3, but, on account of the probable lesion of the lung by the fractured ribs, and also from the difficulty of tracing the course of the ball, the lung being studded with tubercles, &c., it was thought better to be classed under Division 5.

It is a point well worthy of remark, that although from the position of the apertures of entrance and exit of the old round ball, it often appears as if it must have gone through the centre

of the lung, still it will be found that the lung is only wounded superficially, or not through the thickest part, as is seen in the case of Doyle. This seems to be produced by the direction of the ball being deflected by striking the ribs, and then making its exit directly opposite. If a knife or piece of wire were put from one aperture to another, it would, in this case, pass directly through the thickest part of the lung. Preparations Nos. 3637, 3638, 3639, are from Private Owen Doyle.

A ball in passing through the substance of the lung destroys the life of the part, which suppurates, and either gradually heals, leaving a depressed cicatrix, usually, although not always, attached to the walls of the chest. During life, in many cases, it interferes so little with the respiratory murmur as not to be noticed by auscultation, as was very clearly observed in several of the cases from India. On other occasions the wound does not heal, nor the track of the ball close up, but remains open and fistulous, and becomes lined by a distinct membrane, as can be seen in preparation No. 3638.

34th Regt.—Private George Bateman, aged 23, wounded at Cawnpore, November 30, 1857, by a musket-ball, which entered between the seventh and eighth ribs, immediately beneath the right axilla, passed inwards, downwards, and backwards, and made its exit between the eighth and ninth ribs posteriorly, about two inches from the spine. On admission he complained of great pain in the direction of the wound; there was considerable dyspnœa and cough, with bloody expectoration. On the 30th he had an attack of pneumonia.

December 17th. Was free from any bad symptoms.

July 13th. Wounds healed, percussion clear, and respiratory murmur distinct and clear all over the right side of the chest.

July 14, 1858. Duty.

93rd Regt.—David M'Kay, aged 25, wounded at Lucknow, November 16, 1857, by a musket-ball penetrating the right side of chest, emerging at the centre of the back, about an inch above the level of the lower angle of the scapula. During the progress of the case a piece of the spinous process came away; and during a full inspiration air came through the posterior wound with a loud report.

July 14th. Wound healed; respiration audible; pain in right side when lying down, otherwise quite well.

July, 1858. Duty.

60th Regt.—Private John Peake, aged 23, wounded at Delhi, September 14, 1857, by a musket-ball, which penetrated the body on the right side, about an inch from and in a line with the ensiform cartilage, wounding the organs within, and

passing with slight obliquity downwards to the left side, to the ninth and tenth ribs, where it issued, and a piece of lung protruded; the wounds did not heal for five months; had vomiting of blood after the accident, and was insensible.

July 20, 1858. Wounds healed, and feels quite well; at the exit of ball there is a small nipple-like swelling protruding between the ribs, probably a portion of consolidated lung.

July 22nd. Invalided.

75th Regt.—Private Charles Greenfield, aged 25, wounded at Delhi, June 15, 1857, by a grape-shot, weight four ounces, on the left side of the chest. The ball entered through the anterior fold of the axilla, and passed downwards, backwards, and inwards, in a slanting direction, through the left lung, and made its exit apparently between the ninth and tenth ribs, close to the spinous process of the tenth vertebra. The entrance aperture soon healed; that of exit did not heal for seven months, and for six or seven days portions of his food passed through it, and air from the lung.

April 12, 1858. The external wounds have healed, but he suffers much from pain in the side, with a little cough, and much purulent expectoration. On examination there is dulness on percussion, and occasionally moist râles, but these have existed for some time, and are gradually diminishing. The pain is evidently muscular, and has been treated as such with relief.

27th. On examining his lung there is still at the spot above noticed the same dulness on percussion, with harsh respiration and increase of the vocal resonance. He is free from cough, and the position of the physical signs just mentioned corresponds with the course of the shot through his lung; their disappearance cannot for the present be looked for.

30th. Had an attack of pneumonia of the lower lobe of the left lung, with cough, and rust-coloured sputa.

June 1st. He vomited from the effects of antimony which he was taking. This is worthy of notice, on account of the œsophagus having been wounded.

2nd. A few moist râles could be heard.

5th. Quite well.

July 20th. Wounds healed; complains of some difficulty of breathing.

August 26, 1858. Modified duty.

Private Owen Doyle, aged 24; total service, $4\frac{5}{12}$ years, of which he was four months in Malta, one year in the Crimea, and the remainder in India. Wounded at Cawnpore, November 26, 1857, by a musket-ball, which entered the right side of the chest four inches to the outer side of right nipple, between the

sixth and seventh ribs, about two inches under the right axilla, and passed inwards and backwards between the tenth and eleventh ribs posteriorly, where it lodged under the skin and muscles about two inches from the spinous processes of the vertebræ, where it was cut down upon and removed. The ball, on entering the chest, fractured the seventh rib, and on making its exit fractured the tenth rib. The usual symptoms attendant upon wounds of the lungs presented themselves. The man stated that air passed out of both wounds, and he spat up blood for a long time after. Soon after the wound he was attacked with pneumonia of the wounded lung, and for many days he suffered considerably. Ultimately all symptoms of this disease subsided. The wound healed, though he still suffered from cough, dyspnœa, and slight pain in the right side of the chest[a].

August 16, 1858. Admitted into Fort Pitt Hospital from India; wounds healed; complains of cough and shortness of breath. There was nothing abnormal to be detected in the right lung, or along the supposed track of the ball.

18th. Discharged to St. Mary's Barracks, to await invaliding documents.

31st. Readmitted, complaining of pain in the chest generally, but more especially over the left side of the chest, and also slightly over the seat of the old wound; respiration hurried; expectoration abundant and muco-purulent; percussion clear over the right side of the chest; vocal resonance in the inferior lobe of right lung, and along the track of the ball; dulness on percussion in left subclavicular region; respiratory murmur diminished, and crepitation distinctly audible; pulse strong, 86, and respiration 44 in the minute; cough very severe. Was cupped and blistered, and antimonials administered.

September 8th. The exit wound opened, and several small pieces of bone were taken away; complained of great pain, especially in the left side of the chest; pulse 80; respiration 28 per minute; wound discharging freely; healthy pus and air escaped on expiration and on coughing.

9th. Felt very weak, and there was a very fœtid smell from his breath; expectoration very profuse and purulent, and of a disagreeable odour. These symptoms contined up to the 20th, when they began to improve, and he seemed somewhat better, and was able to get out of bed and go about, although still troubled with cough and purulent expectoration, and the discharge from the wound posteriorly had almost ceased.

[a] This case is noticed by Assistant Surgeon Chaumont, Rifles, in the Edinburgh Medical Journal for December, 1858.

27th. Was feverish; pulse high; tongue coated; had a persistent pain in the left subclavicular region, and could not expectorate so freely as before. The fœtor of his breath and sputa returned as bad as ever, and the matter expectorated was of a thick, dark, stringy character. There was dulness on percussion over the whole of the left side of the chest. On the right side of the chest the percussion was clear, with only a few mucous râles, but the patient was in too exhausted a state to be accurately examined.

All these symptoms continued much the same, and he gradually became weaker, and on the 9th October the discharge from the wound still remained very profuse and fœtid, and air escaped very freely from it on coughing. He gradually sank, and died on the 15th October, 1848, eleven months after the wound.

Sectio Cadaveris, twenty hours after death.—*External appearances.* Body stout and well-formed; rigor mortis not passed away; muscles generally firm, and of the usual healthy appearance. There is a cicatrix on the right side of the chest, four inches below and to the outer side of the right nipple, and there is a small depressed aperture on the posterior part of the right side of the chest, about two inches from the spinous processes of the vertebræ, the integument around which is of a livid colour. *Cranium.* About one ounce of fluid at the base of the brain; slight subarachnoid effusion; the veins of pia mater congested; structure was otherwise healthy; weight 3 lbs. 5 oz. *Thorax.* The usual amount of serum in the pericardium; a fibrinous coagulum, not softened, in the right ventricle; the left side of the heart empty; structure of heart healthy; weight 12 oz. The *right lung* adhered firmly and universally to the walls of the chest by adhesions of old standing, more loosely along the anterior margin of the lung than posteriorly; structure of this lung perfectly healthy; crepitant, except a small portion of the inferior lobe close to the track of the ball, which will be more fully described afterwards. The left bronchus having been tied, on introducing the nozzle of a pair of bellows into the trachea, the right lung was found to expand perfectly, and air to rush out externally at the posterior aperture, or that of exit of the ball, showing that there was a free communication between the trachea and the wound in the chest. The aperture of entrance of the ball was marked by a cicatrix four inches below and to the outer side of the right nipple, where it entered the thorax, between the sixth and seventh ribs, and seems to have passed backwards, and made its exit between the tenth and eleventh ribs, and where the ball, as stated in the

Fig 1

Pl II

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Fig 2

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report, was cut down upon and removed soon after being wounded. On introducing a probe through the posterior or the exit aperture, it was found to proceed for one inch in the muscular substance external to the thorax, and then to enter the pleura, and to wound the lung superficially. From this a sinus extends for three inches forwards in the substance of the lung to the entrance aperture, now closed. This sinus is larger than a common quill, and is lined by a distinct membrane with bronchial tubes opening into it. The lung seems to have recovered from the previous attacks of inflammation, except along the track of the ball, and where the bone had become necrosed, and kept the posterior wound open and discharging. The fractured ribs are united, and are not much displaced; that at the entrance of the ball projects somewhat inwards, and must have produced considerable irritation to the pleura and lung. See Plate VII., Fig. 2. Numerous pieces of necrosed bone were found in a paper under the patient's pillow after his death, which were supposed to have come from the ribs. The upper half of the *left lung* adhered to the walls of the chest by old adhesions; inferior lobe adhered to the thoracic parietes by lymph of a more recent date, a coating of which fringed it, and covered its lower margin; structure of the upper half of the superior lobe entirely destroyed and broken up, forming a large, irregular cavity, filled with a dark, fœtid fluid, having several of the larger bronchial tubes intersecting it, the whole in a state of gangrene; inferior half of the same lobe in a state of gray hepatization, as also the upper half of inferior lobe, which was condensed, and sank in water. See Plate VII., Fig. 1. The remainder of this lobe was œdematous, but otherwise free from disease. *Abdomen.*—Liver healthy; gall-bladder filled with dark bile; weight of liver, 3 lbs. 8 oz.; spleen healthy; weight, 11 oz.; kidneys healthy; weight of right, 8 oz.; left, 8½ oz.; stomach and intestines healthy; bladder empty and contracted; veins, as far as they could be traced, were found healthy, and the larger veins filled with dark coagula, and at parts fluid blood; but no fibrinous clots softened in their centres, nor pus globules, were detected. All the joints were healthy. This was at first thought to be a case of pyemia, where the pus globules or blood poisoning had excited inflammation in the left lung, resulting in pneumonia and gangrene; but, as stated above, none of the other morbid appearances usually found in cases of pyemia could be discovered.

Our knowledge of all the circumstances connected with, and the pathological appearances resulting from, poisoning of

the blood in cases of open gunshot wounds, is not yet complete, so that this case, on more minute information on the subject, may be classed under the head of death from pyemia, or perhaps it is to be attributed to an accidental attack of pneumonia unconnected with the wound altogether. It is also remarkable that the inflammation should have attacked the sound lung, and not the one already in a state of disease.

In whatever manner the fatal result is to be explained, there can be little doubt that the wound in the chest influenced, in a most serious and baneful manner, the last fatal attack of pneumonia terminating in gangrene of the lung[a].

78th Regt.—Private Walter Knox, wounded at Lucknow, October 29, 1857, by a musket-ball, which struck him on the right side of the chest, near the nipple; the wound sloughed, and some pieces of bone exfoliated, leaving the respiration much impaired. The man stated that he was struck by a portion of shell, and that for three days after receiving the wound he expectorated blood. He was admitted into hospital at Gravesend from the ship "Argo" in the last stage of debility. A large abscess had formed, extending from the nipple to nearly the crest of the ilium, with numerous openings, through some of which the fractured ends of the broken ribs and the points of the false ribs protruded. On the post-mortem examination it was found that there was no cicatrix or trace of injury to the lung in the position of the wound, but that the lower and posterior portions of the right lung were a mass of disease, studded with tubercles in different stages, with several cavities, varying from the size of an acorn downwards. There was no communication between the cavity of the thorax and the wound, nor with the abdomen; but the peritoneum was generally much thickened with adhesions, and that portion corresponding with the seat of the abscess was almost of a cartilaginous texture, and divided by the knife with much difficulty. *Body* reduced to nearly a skeleton; the wound with the sinuses extended from the nipple to the crest of the ilium; the ribs on either side were detached from the lower portion of the sternum, and on the right side the fractured ends and also the points of the false ribs protruded through the skin. *Heart* large; pericardium contained about half an ounce of greenish, straw-coloured fluid; liver healthy; the gall-bladder was loaded with bile; intestines healthy.

14th Light Dragoons.—Private John O'Neill, aged twenty-

[a] It is to be regretted that there is no record of the early treatment in these cases of perforating gun-shot wounds of the thorax, as to whether venesection was prevalent to a great, or only to a moderate extent. Still, I am inclined to think that it was not resorted to. In the case of O'Neill no venesection was employed.

nine years, wounded November 23, 1857, at Mundesand in the Deccan, by a musket-ball in the right side of the chest; the ball entered posteriorly at the inferior angle of the scapula, five inches above the spinous processes of the vertebræ, apparently between the eighth and ninth ribs, and was cut out immediately after from the right nipple. It had broken a rib at its exit. He went some distance on his horse from the field, and bled considerably; at the time his respiration was almost gasping, his countenance anxious, and pulse very feeble. He was almost in a state of collapse, and was thought to be dying. He was kept at perfect rest, his chest bandaged, and opium administered; for some days this treatment was continued; he was fed on barley-water; the pulse became rapid, and breathing painful; tongue dry and brown; thirst always urgent. On the 28th the wound began to discharge healthy pus; he had no cough, nor did he expectorate blood. The skin became cooler, and tongue began to clean, though the pulse continued frequent; the bowels had not been relieved since the wound had been received.

November 30th. 1 oz. of castor-oil relieved the bowels, and he was carried a march in a dooley, and took light puddings, milk, &c. On the 4th December, 3 oz. of port wine; no medicine. On the 9th could sit up for a few minutes to have his wounds dressed; they were both closing. The ends of the fractured ribs could be plainly felt; he was now allowed a little chicken diet On the 15th the wound in the nipple had healed; he had gained strength, although he was very much prostrated. The chest did not act much on the right side during inspiration. On the 20th he could walk a little about the hospital; the posterior wound had nearly closed; there was slight crepitation about the lung near the wound, readily heard by the stethoscope; tongue had become quite clean; appetite good, and pulse natural. The chest was tender on pressure over the track of the ball, and he could not exert himself without a dull pricking pain there. The right side of the chest still acted very imperfectly. On the 5th September the wounds healed; respiration at entrance and exit of ball, and along supposed track through the lung, normal; and percussion clear.

September 8, 1858. Duty.

90th Regt.—Patrick Farrell, aged 24, wounded November 17, 1857, at Lucknow, by a musket-ball in the right side of the chest; the ball entered over the angle of the ninth rib of the right side, and passed out half an inch from the spinous process of last dorsal vertebra; several pieces of bone came away from the aperture of exit; he spat up blood at the time, and also on

several occasions afterwards. On the 10th October the wounds healed. It is difficult to say whether the internal organs were wounded or not, and if so, whether it was the lung or liver; respiratory murmur and percussion on this side normal.

October 15, 1858. Duty.

Private William Moore, aged 37, wounded at Cawnpore, November 28, 1857, by a musket-ball which penetrated the left side of the chest, three inches below and a little to the left of the nipple, and came out at a corresponding point behind where it injured the rib. The man states that wind came out of the wound, and that he spat blood.

July 13th. The anterior wound is healed; the posterior is still discharging, and a piece of diseased bone can be felt.

September 30, 1858. Duty.

Gunshot Wounds of the Diaphragm.

In the Report on the Medical and Surgical History of the British Army in the Crimea, vol. ii., page 317, it is stated that "it occasionally happened that both chest and belly had been wounded." One case is detailed, that of Dolan; and another is mentioned to have occurred in the 4th regiment. The first died on the tenth day, and the other sixteen hours after being wounded; but no case is recorded where a hernia of the abdominal organs had taken place into the pleural cavity. There appears to be a doubt as to whether Corporal Burke, 18th Regiment, was a case of rupture of the diaphragm without an external wound.

In the case of Greenfield, from India, there is every reason to suppose that the diaphragm was wounded on the *left* side, as the wound into the chest was so low that it was difficult to say whether the food passed out from the œsophagus or from the stomach just at its entrance. In Private Falloon's case it is probable that there was a wound of the diaphragm on the right side.

When the diaphragm is wounded, the floating viscera of the abdomen sometimes pass into the pleural cavity, and Mr. Guthrie is of opinion "these wounds never heal, but remain open ever after. When the diaphragm is wounded in the neighbourhood of the liver or spleen, adhesions may take place so as to prevent hernial protrusion."

It is always worthy of note, whether the wound is on the left or the right side, as to the probability of a hernia occurring, this being more liable to take place on the left than the right side.

There are three specimens of this rare and interesting de-

scription of wound in the Museum. In one case the soldier lived twenty-two years after, and did his duty; another lived one year, also in good health; and of the third there is no record.

No. 1260. Diaphragmatic hernia; the greater part of the transverse arch of the colon with the omentum are situated above the diaphragm, and in the left pleural cavity. The opening is in the muscular portion of the diaphragm, and about an inch in diameter.

No. 1268. Displays the whole of the stomach and greater part of the transverse arch of the colon (both rather small) with the omentum situated in the lower and anterior part of the left cavity of the thorax. The anterior surface of the stomach is firmly attached to the lower lobe of the lung; the lung at this side, as may be expected, has become much reduced in size, and occupies the superior and posterior part of its proper cavity. The right lung is smaller than the left, and from the circumstance of the heart being much displaced by the stomach and colon, and instead of extending across from the second rib of the right side to the sixth of the left, as this viscus naturally does, it now lies nearly parallel to the spine, having the apex almost on a level with the coronary ligament of the liver, and, being of a natural size, must have proved much less yielding during inspiration than the stomach and the colon on the other side of the chest.

The opening in the diaphragm extends in a transverse direction near to the centre of the dorsal attachment of the left side of this muscle, and the objects forming the hernia have contracted adhesions with the diaphragm and other parts, and the peritoneum lining the former is in many places continuous with that covering the colon.

This very interesting specimen was taken from the body of Sergeant Denis Barry, 88th Regiment, who died on the 4th January, 1833, in consequence of gangrene of the left lower extremity, produced, as it was supposed, by metastasis of a severe rheumatic affection of the larger joints. He was wounded at Fuentes D'Onores, in 1811, in the left breast; death took place twenty-two years after the wound. After receiving the wound he had never been able to wear his knapsack with ease, and his breathing became much affected whenever he walked quickly or ascended a hill.

No. 1269. Diaphragmatic hernia, the result of a gunshot wound. The greater part of the stomach, the transverse arch of the colon, and omentum, are seen in the left pleural cavity. This lung adheres very firmly and closely to the walls of the chest, as low as the ninth ribs, by adhesions of long standing.

The lung is pushed to the upper half of the cavity, but, on account of adhesions to the ribs, it is compressed into a thin layer, which lines the walls of the thorax. The heart is also displaced, and lies behind and a little to the right of the sternum. The large curvature of the stomach lies in front, and first showed itself on opening the chest. The transverse arch of the colon is to the left of the stomach, and between it and the ribs. The stomach reaches a little higher in the chest than the gut. There is an opening in the diaphragm, with rounded margins, $2\frac{1}{2}$ inches in diameter, situated 2 inches to the left of the œsophagus; the peritoneum lining the diaphragm proceeds through the aperture, and is continuous with the pleura. Although the serous surface around the opening is smooth and uninterrupted, still there is some thickening and an appearance of old cicatrization. In the pleural sac close to the opening in the diaphragm, on its posterior and external margin, the stomach, colon, and omentum adhere firmly to the pleura, covering the diaphragm and ribs to the extent of a few inches. There are also two broad, thin, and loose bands of adhesion, about 8 inches in length, stretching from the omentum to the base of the pericardium. The stomach and colon are, however, loose and free in the pleural sac; the parts in the aperture of the diaphragm are free from adhesions, and not contracted, and the fingers were easily introduced through it, from the abdomen into the thorax. The œsophagus, after penetrating the diaphragm in the usual place, takes a sharp turn to the left side; the stomach then enters the thorax, a portion of the cardiac extremity of which still, however, lies in the abdomen, in front and to the right of the spleen; the larger part, having entered the chest, curves round and descends to the opening in the diaphragm. The pyloric orifice lies immediately in the aperture; about a foot and a half of the transverse arch of the colon, with the omentum attached, are also in this cavity. On the skin exactly opposite and corresponding to the diaphragm are two cicatrices in the left side of the chest, one situated between the eighth and ninth ribs, three and a half inches from their cartilages where the musket-ball had entered, and the other, its exit, between the eleventh and twelfth ribs, close to the transverse processes of the vertebræ. The ball, in its course through the thorax, must have wounded the diaphragm, and permitted the hernia of the stomach and colon. See Plate VIII.—*Donor, Dr. Williamson, Staff-Surgeon.*

31st Regt.—Private Thomas Fletcher, aged 40, an Irishman, a weaver, 5 feet $6\frac{1}{2}$ inches; stout and healthy frame. Total service, $20\frac{5}{12}$ years, of which $19\frac{6}{12}$ years were spent in India,

a. Stomach, Colon & Omentum in the left side of the Chest. b. Lung compressed. c. Heart & pericardium. d. Diaphragm. e. Aperture in Diaphragm. f. Œsophagus & portion of Stomach. g. Small & large intes

where he had two or three attacks of intermittent fever. He was wounded at Sobraon, February 10, 1846, by a musket-ball in the left side of the thorax, entering between the eighth and ninth ribs, and about four inches from their cartilages, and making its exit close to the transverse process of the eleventh dorsal vertebra, and between the eleventh and twelfth ribs.

He landed in England on the 13th January, 1847, in good general health. Admitted into Fort Pitt General Hospital on the 20th January, under observation for the wound in his side. Discharged well on the 2nd February. On the 11th February, immediately after his dinner, he was attacked with vomiting and pain in the left side over the spleen; this continued until the evening of the 12th, when he was admitted into this hospital. He could not account for his sickness; he had been quite well in the morning, and his bowels had been acted on.

On admission his skin was cold, pulse quick, small, and wiry, 90; respiration natural; pain over the spleen increased on pressure. On the 13th the pain had left the side and shifted to the shoulder and clavicle. It was not acute. He was free from all other pain and all inflammatory symptoms to the hour of his death, neither was there any pain on pressure in the region of the stomach, nor any tension of the belly, but, on the contrary, an extraordinary hollowness, or drawing in about the umbilicus, resembling very much in appearance a man suffering from "Asiatic cholera."

His bowels could not be acted on, and the irritability of his stomach and vomiting of all things swallowed continued to the last. He began to sink in the afternoon of the 16th, gradually became weaker, and died on the 18th February, it being eight days from the time he was first attacked with vomiting, and twelve months from the time he was wounded.

The treatment consisted first of an emetic, with a blister over the spleen. Afterwards full doses of calomel and opium, morphia, and hydrocyanic acid, frequently repeated, castor-oil combined with croton-oil, both by the mouth and injections, turpentine injections and fomentations to the abdomen, hot baths, and hot bottles to his feet, and beef-tea injections, were the remedies administered.

Post-mortem Examination thirty hours after death.—*External Appearances.* Body stout and well formed; skin shrivelled, more particularly that of the hands and feet; features contracted and indicative of a person having died under great suffering; muscles rigid. *Cranium.* About one ounce of fluid at the base of the brain; veins of the pia mater congested, as also those of the velum interpositum and choroid plexuses; section of the

brain presented many bloody points; weight of brain, 3 lbs. *Thorax.* The structure of both lungs was healthy; the posterior part of the right was attached to the chest by adhesions of long standing; the heart was of its natural size, and its structure healthy. *Abdomen.* On tracing the small intestines, five intus-susceptions were found, the first situated a foot and a half from the duodenum, and the other four were generally from eight to ten inches apart. The portion intus-suscepted was in each about two inches; there was no vascularity or congestions in the intus-susceptions, or in any of the abdominal viscera. Both portions of the stomach, viz., the part in the chest and the part in the abdomen, contained a quantity of dark fluid, mixed with portions of food and medicine. The duodenum and upper part of the jejunum, as far as the first intus-susception, was distended with flatus; the small intestines below the invagination although not distended, but in their normal condition, were coated with mucus tinged with bile. The caput cæcum and ascending colon, to where it entered the chest, were distended, and contained a quantity of fluid and hardened fæces.

The transverse arch of the colon was distended with flatus and some feculent matter; the descending colon and rectum were empty; liver healthy, weight, 4 lbs. 4 oz., kidneys healthy, weight of right, 6 oz., left, 6 oz. 2 dwts.

Remarks.—Fletcher was in perfect health until immediately after he had taken a full meal, which, no doubt, he had frequently done since the time he had received the wound. It may, therefore, be asked what was the immediate cause of vomiting, and the sudden attack of illness; probably, the portion of the stomach still in the abdomen having become over-distended, spasmodic contraction of the diaphragm may have been induced, and prevented the food from entering the larger portion of the stomach, situated in the thorax, but it might have been supposed that after the contents of the lower portion had been ejected, irritability of this organ would have ceased, which did not take place, but continued to the last without the slightest alleviation.

The reason for supposing it was spasmodic contraction of the diaphragm is, that on examination the opening in this muscle was found large enough to admit two fingers with ease along the side of the gut.

Although it was, however, known that he had been wounded in the side, yet it was never suspected that the wound was in any way connected with the disease for which he was under treatment; his general appearance was most peculiar, the contracted state of the abdomen, the total absence of all pain in

his belly after the first day, and of all inflammatory symptoms, and the occurrence of pain in his left shoulder. It is known that in diseases of the liver pain in the right shoulder is a common symptom. The pain in Fletcher may have had the same origin, whatever that may be, as no satisfactory explanation has as yet been given of it, except that it may depend upon some irritation of the ramifications of the phrenic nerve communicated along its course to its origin from the cervical and bronchial plexus, and then reflected by twigs distributed to the shoulder. A number of the symptoms which presented themselves in this case were those usually attendant on strangulated inguinal hernia, viz., incessant vomiting and obstinate constipation, pulse small and wiry; but there was no stercoraceous vomiting, dissection showing that it could not occur.

The intus-susceptions were the first morbid appearances seen on opening the body, and the remark was immediately made that they did not present the appearance of invaginations which are the cause of death, but rather what are seen to take place during the latter stages of life when a patient has no symptoms of derangement of the intestinal canal. It is, therefore, probable that the intus-susception took place after the commencement of the fatal disease, and was not the cause of it, but to be attributed to the violent peristaltic motions excited by the action of the croton-oil which was administered.

At the first view of the case it appeared to throw some light on the physiology of vomiting, as to how far the muscles of the abdomen and diaphragm co-operate with the stomach in this mechanical act. But the whole of the stomach not being displaced into the thorax, whatever influence they possess may have been, therefore, exercised on the part in the abdomen.

It is also to be supposed that the contents of the stomach, and transverse arch of the colon, situated in the thorax, remained the same from the time they became strangulated.

Mr. Guthrie's remarks as to wounds of the diaphragm never uniting may be the fact generally, but in a case where a wound of the diaphragm is small, and the patient is kept quiet and on proper diet, there appears to be no reason for supposing that the wound would not close; the base of the lung might adhere to the diaphragm, close up the opening, and so form a boundary between the thorax and abdomen, and thus prevent a hernial protrusion. Besides, it is only in those cases where a hernia has taken place that a surgeon, on an autopsy taking place, makes such a careful examination of those parts. I am therefore disposed to think that in some cases of wounds in the lower part

of the thorax the diaphragm has been injured, and the patient has recovered from its effects so as never after to draw any attention to it; and that union of the divided fibres of the diaphragm or pleuritic adhesion have taken place in some cases, and prevented a hernia from forming, as is possibly the case in that of Greenfield and Eally, and others.

It is very remarkable that this extraordinary malposition of the stomach and colon should have produced so little inconvenience to the patient, and that in every respect Fletcher was in perfect health until strangulation took place.

The case of Sergeant Denis Barry, who was wounded in nearly the same situation, where there was also a hernia of the stomach and colon into the thorax, and continued to do his duty as a soldier for nearly twenty-two years, shows how little inconvenience he also experienced. Had the exact state of things been accurately diagnosed during life, what steps could have been taken for his relief? Would a surgeon be warranted in cutting into the abdomen and reducing the hernia?

In this case it would have been impossible, on account of adhesions of the displaced viscera to the surrounding parts. The diagnosis of such a displacement would be extremely difficult, if not impossible. There was, in January, 1847, under my care in this hospital a patient wounded in nearly the same situation, viz.:—

Private Thomas Eally, aged 25, was wounded on the 29th December, 1843, at Marajpore, by a grape-shot, which entered about three inches below and to the outer side of the left nipple, between the eighth and ninth ribs; it was cut out shortly after the accident, behind and at the angle of the eleventh rib. He suffered severely from pleuritis of the left side in 1844. His general health is now (January, 1847) good, and he has no complaint except shortness of breathing, or rather uneasiness in his chest when wearing his knapsack and cross-belts.

It is probable that the diaphragm was wounded in this case also; if so, the wound may possibly have closed, or pleuritic adhesions have formed and prevented a hernial protrusion. If, however, Eally was seized in the same manner as Fletcher, after all other means had failed, should operative measures be resorted to? I am disposed to think that few surgeons would be inclined to undertake such an operation from the great uncertainty as to the state of the parts that might exist.

GUNSHOT WOUNDS OF THE HEART AND GREAT VESSELS.

The Museum can only furnish three cases of these formidable wounds.

No. 173. Heart exhibiting a lance wound, which penetrated the right ventricle through the diaphragm. Death five months after the wound.—*Donor, Mr. Guthrie*—who remarks: "If this man had lived long enough, he might have furnished an instance of hernia of the stomach or intestines into the pericardium."

No. 174. A punctured wound of the right ventricle, close to the apex. Instant death.

No. 403. Abdominal aorta, showing a horizontal wound through its coats, caused by the point of a bayonet. Death three hours after.

Class V.—Gunshot Wounds of the Abdomen.

Division 1.—*Simple Flesh Contusions and Wounds.*

Four cases of simple flesh wounds arrived from India, and have been discharged to duty. In one case the ball is reported by the surgeon of his regiment to be lodged somewhere above Poupart's ligament; profuse hemorrhage followed, which stopped of itself. In another case the ball entered below the ensiform cartilages on the right side, and passed out at the extremity of the last floating rib on the right side. The third was a slight wound from grape-shot.

Division 2.—*Contusions and Non-penetrating Wounds.*

Two cases were admitted from India, and have been sent to duty.

64th Regt.—Private James Falloon[a], wounded at Cawnpore, November 28, 1857, by a musket-ball which entered two inches below the ensiform cartilage, on the right side, and at the margin of the cartilage of the false ribs, and passed downwards and backwards, and was cut out opposite the extremity of the last floating rib. He vomited florid blood, according to his own statement, at the time; there was no external bleeding. The ball passed behind the ribs, and there is little doubt that the peritoneum was slightly wounded, and probably the diaphragm.

August 18, 1858. Wound healed. Duty.

35th Regt.—Private John Lowe, aged 39, wounded January 25, 1857. The ball entered the abdomen on a line with the margins of the ribs, and near their angles; it was extracted

[a] Noticed by Assistant-Surgeon Chaumont, Rifle Brigade, in the Edinburgh Monthly Journal for December, 1858.

shortly after through an incision made in the epigastric region, it having lodged beneath the skin in that locality; no discoloration of the integuments between the entrance of the ball and where it was cut out was at any time perceptible to mark its course; he vomited blood at the time; had not any external bleeding; his wound healed in the usual period, and he was discharged from hospital six months after its receipt. He has since suffered much from pain and tenderness in the region of the epigastrium, and he has been unable to wear his accoutrements, the pressure causes so much suffering; under the circumstances, he is unfitted for the active duties of a soldier.

April 28th. Invalided.

Division 3.—*Penetrating or perforating, with Lesion of the Intestine.*

Two were admitted from India, and both will be invalided,

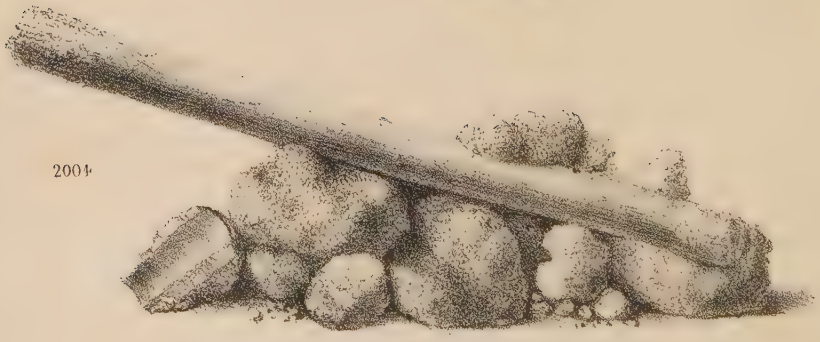
It is well known that gunshot wounds of the solid viscera, as also those of the small intestines, are generally fatal; still, this is not invariably the case, as is seen by the very fine specimen, No. 1271. Wounds of the large intestines are also not so formidable or dangerous, especially when the wound is in the neighbourhood of the cæcum or sigmoid flexure, where the intestine is more fixed and bound down, and only partially covered by the peritoneum.

Two cases of abnormal anus by gunshot perforation appear to be a large proportion to the total wounded, 603. The 2296 cases of wounded from the Crimea furnish only one such case, Private James Beehan, 19th Regiment, who is now in Guy's Hospital, never having recovered from the wound, though it has occasionally closed and again re-opened, as has taken place in every one of the three cases now detailed. A note from Mr. Birkett, dated 21st January, 1859, says:—"He (Beehan) has since my last report suffered with severe attacks from albuminuria, and is anasarcous." For particulars of this case, *vide* page 330 of the Report on Crimean Wounded.

In the case from which preparation No. 1270 was taken, the wound is likewise on the left side, and the colon was wounded at a part where it is *entirely covered* by peritoneum. This makes the fifth case of wound of the large intestine detailed in this Report, and in that of the wounded from the Crimea.

It is worthy of remark that in all these five cases the artificial anus is on the left side, and almost precisely in the same situation, with the exception of the one, No. 1270. In Hogan there was a partial fracture of the ilium. In Beehan there was an injury of the vertebræ, and probably also of the kidney. In

1270


2004

M'Cartney and Henderson there was no such complication. Private Henderson was under my care in 1844.

As already stated, all these five cases of wounds of the large intestines, and also the three of the diaphragm, are on the left side. This at first sight would lead to the supposition that the left side of the body was more exposed in action than the right, and might probably be accounted for by soldiers placing the left side more forward when in the act of firing, supposing that the wounds were received when in this position. This appears, however, not to be the case, but is to be attributed to wounds of the right side of the abdomen being more fatal than those on the left, in consequence of the liver occupying so much space on that side; for on examining the wounds in the thorax received from India, out of 19 I find that 15 were wounded on the right, and only 4 on the left side.

The following three very interesting cases of gunshot wound of the sigmoid flexure of the colon are examples of this lesion.

32nd Regt.—Private Cornelius Hogan[a], aged 34, wounded June 30th, at Lucknow, in the left hip, an inch and a half below the crest of the left ilium, and nearly midway between the anterior and superior spinous process of the ilium and the spinous process of the back. The ball entered and must have passed into or wounded the sigmoid flexure of the colon, and is supposed still to remain in, as it has never, as far as the man knows, been passed by stool. For twenty-two days he passed his fæces entirely through the opening, but since then he has never passed any feculent matter through the wound, but only flatus; this also has ceased for the last fortnight, but there is still a considerable discharge of purulent matter, and he complains of pain in the back.

He was transferred from Fort Pitt to Yarmouth Hospital, July 4, 1858, and from thence was sent to the depôt of his regiment, which he joined on October 28th.

He was tried by court martial on December 9th, and was sentenced to forty-two days' imprisonment at Fort Clarence, with such labour as the surgeon in charge considered him capable of performing without risk. Previous to appearing before the surgeon he had undergone an hour's shot drill, which caused the wound to reopen. He was consequently sent to the garrison hospital, and was transferred to Fort Pitt, January 29, 1859, with fæces still passing through the wound.

March 13, 1859. Wound healed, and he enjoys good health; but has been invalided as being unfit for further service.

[a] This case is noticed in the Edinburgh Monthly Journal for December, 1858, by Assistant Surgeon Chaumont.

10th Regt.—Private Michael M'Cartney, aged 27, wounded by a musket-ball, May 11, 1858, at Chitawarah, which passed through the left side of the body, from behind forwards, passing through the diameter of the colon. For a period of three months he passed fæces through the opening.

February 25, 1859. Wound still continues to discharge; complains of great pain in the abdomen; has piles, and is troubled with diarrhœa; he is rather anemic in appearance.

March 4th. Diarrhœa still continues; a truss has been applied over the fistulous opening.

10th. The truss discontinued, as it causes much flatulence.

15th. No improvement; complains of cold and shivering.

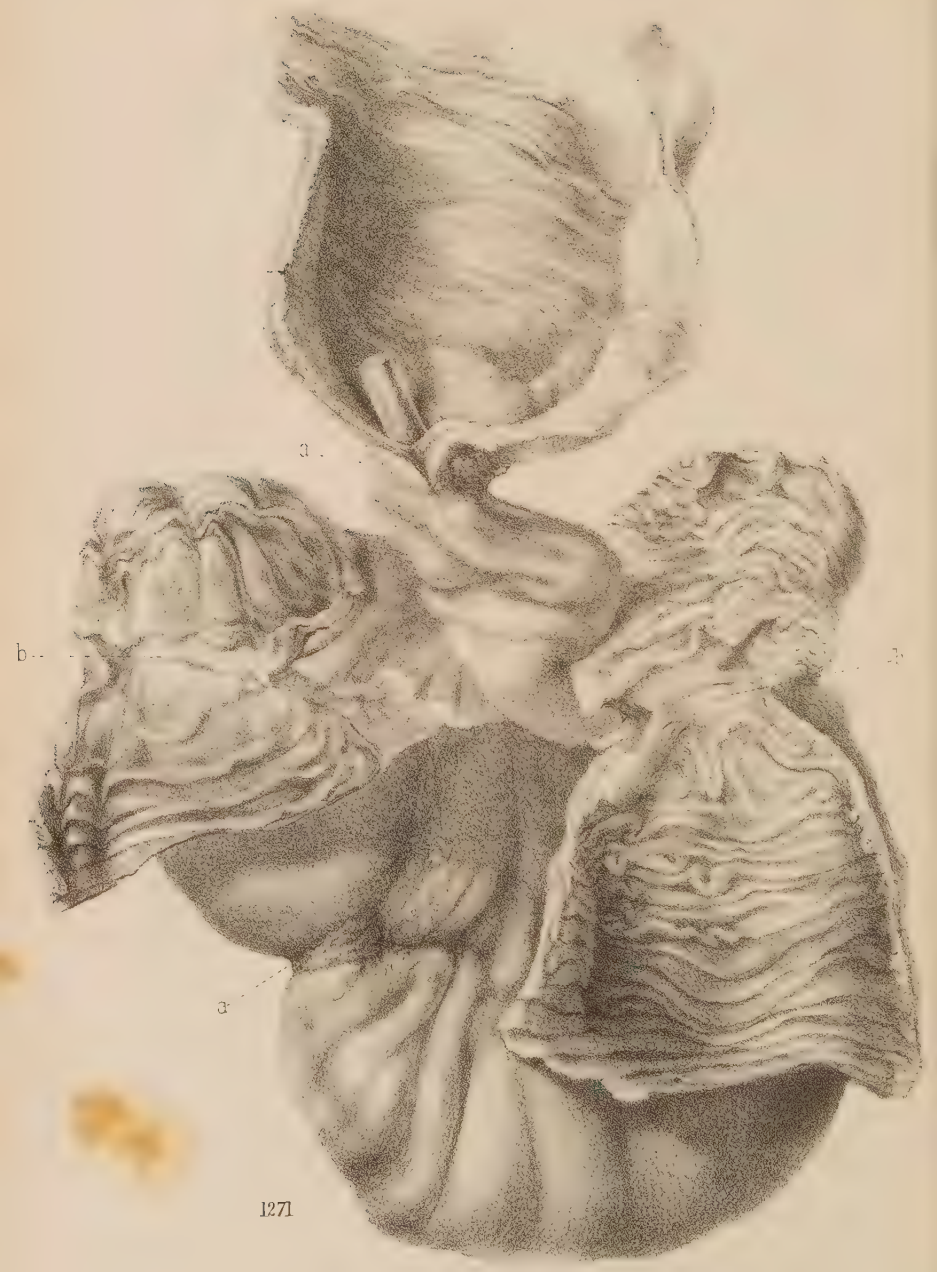
13th Regt.—Private John Henderson, aged 36, wounded at Cabul, in October, 1840, by a musket-ball which entered the left side at the extremity of the last rib, and made its exit about two inches from the spine, passing obliquely downwards and backwards, penetrating the colon, followed by very profuse discharge of fæces; the wound was of a very dangerous nature. He was taken prisoner, and suffered great privations. He was admitted into Fort Pitt, July, 1844, with both apertures of entrance and exit of ball discharging fæces. Various methods of treatment were tried to effect a cure, but without success; the wounds would close for a short time, and then break out again, so that he was eventually discharged the service, August 26, 1844.

The following preparation is from a sailor who was wounded in the act of rowing towards the enemy. It is to be regretted that there is no detailed history of this interesting case; but, from the state of parts now exhibited, there can be no doubt that the patient lived for some time, perhaps years, in a most wretched condition.

No. 1270. Gunshot wound of the large intestine, terminating in artificial anus. Vide Plate IX.

The ball entered on the left side, wounded the colon as it is curving downwards to become the descending colon, and passed out, fracturing the eleventh rib at its anterior third. The aperture in the abdominal walls is about 3 inches in diameter, and a knuckle of intestine protrudes. The opening in the gut is about $1\frac{1}{2}$ inches in diameter, and the mucous surface is everted and has become very firmly united to the integuments by adhesions of old standing. So much is this the case, that the mucous membrane and skin have become quite continuous, the intestine has also contracted firm adhesions to the adjacent peritoneum on the inner side.

A quill is inserted into the upper part of the gut, which is



G.H.Ford

a. Contractions;
b. Contractions laid open.

W.West imp.

of the usual caliber, and the mucous membrane is healthy. The bowel below the wound is very much contracted from want of use, but pervious. The fæces were voided through the preternatural opening.

The following preparation of a perforating gunshot wound through several folds of the small intestine, followed by recovery, is, as far as I am aware, quite unique.

No. 1271. Two pieces of the small intestine; jejunum showing the results of injury by gunshot wound. The larger piece of intestine exhibits three constrictions of that gut, two of which have been laid open to show the interior, and the third one remains entire. In the inside these contractions present much the appearance of a cicatrix, being totally devoid of the normal villous character of mucous membrane of the intestine; above and below it is bounded by a sharp and well-defined line of the natural lining of the intestine. Externally these constricted points are covered by a layer of old granular lymph; they were of a darker hue and more vascular than other portions of the small intestine, which, however, presented throughout the arborescent vascularity and soddened state constantly observed in rapidly fatal cases of blue spasmodic cholera. The smaller piece of intestine exhibits a fourth constriction of the gut, capable of admitting only a good-sized quill..—*Donor, J. R. Taylor, Surgeon, 80th Regiment.*

This preparation is from Private Paul Massey, 80th Regiment, who was shot in the abdomen at the battle of Ferozeshah, December 22, 1845. The symptoms consequent immediately upon the wound appear to have been so inconsiderable that it is recorded by Dr. Mac Donald (then surgeon of the regiment) that it was his opinion that the ball had coursed round the abdomen, and not penetrated or passed through that region. The patient, however, shortly before his death, stated he had passed blood by stool after the receipt of the injury. Recovery followed slowly, but appeared to be perfect. The soldier, however, became subject to attacks of bowel complaint, gradually becoming more frequent, and for the last twelve months of his life he was nearly constantly under treatment for symptoms of dysentery of the land scorbutic type. Whilst in hospital on account of this disease, he was seized, on the 13th May, 1851, with blue spasmodic cholera, terminating fatally the same day. Death five and a half years after being wounded.

Cholera was then prevalent in the neighbourhood, and became epidemic in the regiment in the following month.

Post-mortem Appearances, an hour and a half after Death.—Externally. Livid; but less so than during life; not much

emaciated; cicatrix of a wound in left linea semilunaris, about four inches above the crista ilii, and on the same plane posteriorly, another cicatrix, an inch to the left of the spine.—*Head.* General livid appearance of meninges and cerebral substance, some milky opacity on the upper surfaces of the hemispheres, slight serous effusion under arachnoid.—*Thorax.* Adhesions on right side; lungs partially collapsed; structure healthy; heart normal; fluid blood in left ventricle.—*Abdomen.* Omentum firmly adherent to the internal surface of anterior cicatrix, and gathered into a knot at that point. The intestines neither there nor elsewhere morbidly adherent, but the fold of intestines immediately opposed to the cicatrix presented a line of contraction, as if a ligature had been tied round the gut. The fold of intestine immediately above presented the same appearance, and on the first fold, four inches from the first noticed contraction, and situated in a line below the umbilicus, was another similar appearance. The mucous surface of the small intestine generally was pale-pinkish in colour; no ulceration of large intestine; upper part of colon attenuated and contracted in situ; rectum thickened; stomach pale; liver small, congested; gall-bladder half filled with dark viscid bile; spleen small; kidneys healthy.

It is curious to remark, on post-mortem examination of a case of direct gunshot perforation of the abdomen, that the intestine is wounded in many places considerably removed from the direct course of the ball. Is this removal of wounded portions of intestine from the line of the ball due solely to the natural peristaltic action, or to something more than this, as the result of the injury? Probably the latter influence is considerable; as it has been remarked, and I believe truly, that under perforation of the intestines by ulceration there is not only contraction in caliber, but marked *shortening* of the intestinal canal. This action beyond the peristaltic may be expected, and really appears to follow equally perforations by injury and disease, thus explaining the withdrawal of the wounded points of intestine from the line of the ball, as indicated by the orifices of entrance and exit.

In a case that came under the observation of Deputy Inspector General T. Alexander, C.B., the small intestines were found to have been wounded sixteen times[a]; and in preparation 1272 the small intestines are perforated four times, and the mesentery twice.

No. 1272. Gunshot wound of the small intestines and me-

[a] Mr. Guthrie's Commentaries, p. 576.

sentery, the former wounded in three places, and the latter in one. Death twenty-four hours after the accident.

No. 1125. A gunshot wound of the large curvature of the stomach. The man lived eight hours after the accident.

Class VI.—Gunshot Wounds of the Back and Spine.

Division 1.—*Simple Flesh Contusions and Wounds.*

Three were admitted, and two were sent to duty.

Division 2.—*With Fracture of the Vertebræ, without Lesion of the Spinal Cord.*

Six have been admitted; two have been discharged to duty, two invalided, and two remain; all were the result of musket-balls; one was a case of fracture of the ilium and spinous process of the lumbar vertebræ, with the wounds still unhealed. One with fracture of the spinous process of the dorsal vertebræ; wounds still open.

Two cases of wounds of the sacrum; in one of them the wound was still open, and a probe could be passed right across from the one aperture to the other. The last was a wound of the spinous process of the lumbar vertebræ, also still unhealed.

The two following cases are examples of this description of wound.

93rd Regt.—Sergeant James Munro; wounded at Lucknow by a musket-ball through the loins; the ball entered a little behind and below the crest of the left ilium, and passed a little upwards and backwards, nearly across the back, and made its exit immediately above the crest of the right ilium; numerous pieces of bone came away from both apertures. Shortly after the injury the urine was tinged with blood, and it is doubtful whether the two last vertebræ are injured.

12th July. The aperture of exit of ball has closed; that of entrance is still open, and discharging, and the probe can be introduced for a considerable distance, but bare bone is not detected; he is unable to sit upright, and he has lost considerable power over the limbs; has incontinence of urine.

Invalided 29th September, 1858.

24th. Private Patrick Farrell, aged 30, wounded 7th July, 1857, by a musket-ball which entered on the right side of the third lumbar vertebra, two inches from the spinous processes passed across the back, and made its exit a little below the centre of the crest of the left ilium; several pieces of bone came away from the aperture of exit.

August 2nd. Aperture of entrance is healed; that of exit

is still discharging, leading down to diseased bone. There is some thickening over the spinous processes of the lumbar vertebræ. Undisposed of.

Division 3.—*With Lesion of the Spinal Cord.*

None were admitted from India; but the following cases from preparations in the Museum illustrate this injury.

No. 2912. Dorsal portion of the spine, showing a bullet lodged in the canal. The ball appears to have entered exactly through the centre of the arch, which, with the spinous process, is partly broken away. From a sergeant of the 5th Dragoons, who was shot by a private of the regiment.

No. 2913. Is from Private R. Greive, 3rd Light Dragoons, who was wounded at Rhamnuggur, Nov. 21, 1849, by a musket-ball which entered below the right mamma, penetrated the lower lobe of the right lung and diaphragm, grazed the upper surface of the liver, and passed between the head of the eleventh rib and the vertebræ. It lodged in the spinal canal, and caused paraplegia. Death four days after the injury.

No. 2914. Fifth dorsal vertebra, exhibiting fracture of part of the right side of its arch by a pistol-ball which is lodged in the canal. The ball entered the right deltoid muscle and proceeded downwards on the outside and upper part of chest near to the spine, and finally lodged in the canal. The course of the ball was not known till the death of the patient, which took place thirty days after the injury. The body and limbs below the navel were deprived of sensation and motion; the urine required removal by the catheter, or dribbled away; and the fæces were passed involuntarily; followed by sloughing of the integuments of the sacrum and trochanters. From an officer who was wounded in a duel.

No. 2915 is a gunshot fracture of the atlas and axis. The ball dropped into the mouth, and the man died in thirty days after the wound.

Class VII. — Gunshot Contusions and Wounds of the Perineum, and Genital and Urinary Organs, not being, at the same time, Wounds of the Peritoneum.

Three very interesting cases have been admitted from India. In two very similar cases the ball passed through the left testicle, injuring the urethra, so that the patients passed urine for some time through the wounds in the urethra (as was stated in the case-book of Assistant-Surgeon Smith, 9th Lancers, who had medical charge of the men on the passage home); the fistu-

lous opening in the canal closed entirely, and the natural passage remained undiminished in size, allowing of a full-sized catheter to pass with ease into the bladder. One of them was sent to duty, and the other to modified duty. The third case was from a spent round shot, which struck the man over the pubes without injuring the integuments, producing incontinence of urine. He still remains undisposed of.

Private Peter Forbes, aged 32. Wounded at Delhi, June 18, 1857, by a musket-ball which struck the left testicle, passed through the pubes and bladder, and made its exit posteriorly in the centre of the right hip. The left testicle was so much injured that it was removed the same day. He passed his urine for one month entirely through the wound.

April 10, 1858. A large bougie was passed with perfect ease.

20th. The sinus does not now appear to communicate with the urethra.

May 1st. Removed to-day a small piece of bone from the depth of the length of the forceps, in the pelvis. There is no communication between the sinus and the urinary passages.

10th. Another small piece of bone taken away from the same depth as the former piece.

13th. The wound remains in the same state; a piece of bone can be felt by the probe, very deep and apparently loose, but cannot be reached by the forceps.

June 4th. Succeeded in reaching and recovering two pieces of bone, evidently from the internal surface of the ischium.

11th. The bone was removed on the 4th; there has been less discharge, and he is quite free from pain, and can walk about.

July 10th. At Fort Pitt; wound quite healed.

July 21, 1858. Modified duty.

75th Regt.—Private S. Young, wounded at Delhi, September 14, 1857, by a musket-ball which struck the left side of the penis, injuring the urethra and left testicle; then entered the inner side of the left thigh, and made its exit through the centre of the hip posteriorly. The left testicle came away shortly after, and he passed his urine through the wound in the side of the penis.

20th. All the wounds are now healed; No. 8 catheter can be passed with ease.

July 21, 1858. Duty.

88th Regt.—Private William Smith, wounded at Cawnpore, November 26, 1857, by a spent round shot, which caused

a bruise over the symphysis of the pubes and outer side of the left thigh; has never since been able to retain his urine.

August 16, 1858. His urine passes constantly from him, without having the least control over it. He has been supplied with a patent urinal. He complains of weakness in his loins, but is otherwise in good health.

No. 2956. Cast of a section of a urinary calculus which had a musket-ball for a nucleus.—*Donor, Sir G. Ballingall, Edinburgh.*

The following case illustrates the tricks that soldiers play upon each other.

Private James Hussey, aged 25, 18th Regiment, had served abroad seven years, of which upwards of six were spent in China. At Hong Kong, on the 24th October, 1845, he was taken to the guard-room in a state of intoxication, and on becoming sensible he found a piece of cane, about a foot long, in the urethra, retained by a string tied round the penis, and the removal of which was attended with slight hemorrhage. About a month afterwards he complained of pain over the pubis and difficult micturition, the urine when passed being mixed with blood and mucus. On introducing a catheter into the bladder, a grating sensation was experienced.

He was admitted into Fort Pitt Hospital on the 19th May, 1847, in a very emaciated condition. His skin was dry and scaly; gums spongy and scorbutic, and he likewise suffered from diarrhœa, which attacked him at the time he was leaving China. He complained of constant and severe pain over the hypogastric region and along the course of the urethra; he was unable to retain his urine, which continually flowed from him in small quantities. On introducing a sound into the bladder, a large stone, supposed to be of soft consistence, was at once detected. His general health having considerably improved, and the diarrhœa having in a great measure been checked, the lateral operation of lithotomy was performed. The patient had a favourable recovery. The man was not aware of a portion of cane having been driven into the bladder, nor was this circumstance known when the operation was commenced. No. 2004.—Portion of cane, being part of the stem of a tobacco-pipe removed from the bladder by the operation of lithotomy. It is $3\frac{3}{4}$ inches in length, and hollow in the centre, and was completely imbedded in the centre of a soft stone; the portions extracted must have weighed about two ounces; the fragments preserved weighed one ounce, and are composed of uric acid.—*Donor, Dr. Williamson, Staff-Surgeon.*

(*To be continued.*)

Art. XVIII.—*On Compound Fracture of the Patella.* By Josiah Smyly, A. B., Surgeon to the Meath Hospital.

It has been stated by Mr. Erichsen, that "compound comminuted fractures of the patella, especially if occasioned by bullet wounds, and injury of the joint, are usually cases for immediate amputation." Although agreeing with this aphorism of that distinguished surgeon, yet I feel more inclined to coincide with the opinion put forward by Guthrie, namely, to substitute excision of the joint for amputation, in every case "where the popliteal artery and nerves are not injured"[a]. The great danger to life in cases where the knee-joint has been opened, and suppuration results from the lesion, should not be overlooked, nor should the surgeon allow himself to be lulled into false security by the absence of urgent symptoms during the first few days. The case is one demanding immediate operative interference, for if the period for primary amputation is permitted to pass by, it is not probable the patient will survive to reach the time for a secondary operation; the results of intermediate amputation are such as to preclude the hope of success. The records of cases of this injury, when, owing to the efforts of a good constitution, the patient has lived without operative aid, are so very few that they should not weigh against the above rule of practice; besides, the limbs which have been saved at such a risk turned out to be almost perfectly useless.

The following cases illustrate:—

1st. The danger of compound fracture of the patella which involves the knee-joint.

2nd. The unsuccessful result of intermediate amputation.

3rd. The severe suffering and imminent danger to which the patient is exposed, before he arrives at the period for secondary amputation.

Case I.—J. Mortimer, aged 35, a bricklayer, was admitted into the Meath Hospital, under the care of Professor Porter. He had just fallen from a scaffolding, and pitched upon his left knee. The patella was found broken into three or four pieces. The joint was laid open, so as to admit the finger, and was filled with blood. Amputation of the limb was urged upon the patient, but he resolutely refused to submit to it. The wound was drawn together, and covered with flour and white of egg. There was no constitutional depression.

[a] Commentaries on the Surgery of the late War, p. 82.

Next day there were scarcely any symptoms of local inflammation; pulse 95. Amputation was again proposed, but the patient would not consent.

Third day. But little pain in the knee, which is not hot; pulse 85.

Fourth day. Complains of pain in the knee, which is now inflamed; 80 leeches applied over the joint.

Fifth day. Patient complains of great pain; pulse 100, hard; wound disposed to run into mortification; edges puffy; integuments of a bluish colour, with one or two vesications upon them; the knee greatly swollen; bloody serum oozing from the wound; at 4 o'clock P.M. a consultation was held to consider the propriety of amputation being now resorted to; the conclusion come to was to postpone it till a more favourable opportunity should present.

Sixth day. Patient was easier.

Tenth day. The wound was discharging a fetid sanies; the patient sweated in the night; pulse 120; general debility; decided hectic established; and, five weeks after the occurrence of the injury, he died, if not suddenly, at least unexpectedly. During this time the necessity of submitting to removal of the limb was frequently urged upon him.

On examination of the articulation after death, the patella was found broken into four fragments, totally stripped of cartilage, and eroded. The condyles of the femur were very extensively denuded; the edge of the tibia was also stripped; the synovial membrane highly inflamed; a quantity of foul and fetid pus was in the cavity of the joint, which communicated by a large opening posteriorly with an abscess situated in the ham, and extending both upwards and downwards in the thigh and in the leg, but more extensively below under the gastrocnemius, muscle.

Case II.—*Compound Fracture of Patella; Amputation on twelfth day after the Injury. Death on the sixteenth day.*

F. H., Esq., civil engineer, aged 29, fell with his horse in turning a corner of a road too suddenly, and sustained a compound fracture of the left patella, and lacerated wound communicating with the joint.

He was twelve miles from Dublin at the time, and as he could not bear to be removed, he was carried to an inn in a neighbouring village, and seen by a surgeon, who considered it expedient to make an attempt to save the limb. Although he passed his finger freely into the joint, and found that the patella was broken into several fragments, he closed the wound, ap-

plied a many-tailed bandage, placing the limb upon a single inclined plane, the foot being elevated.

I saw the patient on the third day after the accident, in consultation. The wound had a foul, unhealthy appearance, and from it exuded a dark-coloured fetid matter, mixed with bubbles of air. The whole limb was greatly swollen; the skin discoloured; acute pain felt in the joint; face flushed; pulse 120; great thirst; loss of appetite; bowels acted upon by medicine.

Fifth day. A good deal of matter oozing from the wound, which was enlarged by an incision two inches in length; thigh greatly swollen, tenderness extending towards the groin; pulse 130; tongue dry.

Eighth day. Countenance sunken; tongue dry and brownish; an incision was made at the external part of the thigh, down to the bone, and matter evacuated. Ordered broth, jelly, &c.

Tenth day. Had a very profuse perspiration on the night of the eighth day. Another abscess was opened on the outside of the knee.

Twelfth day. A purulent deposit has formed over the right parotid within the last twenty-four hours; discharge from the thigh very fetid. On this day Professor Porter was called in in consultation. We all agreed to propose amputation, as likely to afford the only, though slender, hope of saving life. The operation was performed; the patient was very low after it, and required to be supported by wine, &c.

Fourteenth day, third after the amputation. Profuse putrid discharge from the stump; countenance sunken; pulse 120 to 130 and 140, very weak; nourishment, wine, bark, and opium; disposition to wandering.

Considerable raving since last report; stump sloughy; patient extremely weak; pulse feeble; the stomach rejecting wine, brandy, &c. He gradually sank, and died at 3 o'clock A. M. on the sixteenth day after the accident, and the fifth after amputation.

On examination of the limb the patella was found to be fractured into seven fragments. Some were quite detached, and denuded of periosteum. There was some pus in the joint, and the red, pulpy, villous membrane, described by Mr. Key, well marked. The cartilage was not detached in any place. The abscess in the back of the thigh communicated with the joint at its upper and internal part, and insinuated itself round behind the bone to its outer side.

Case III.—*Compound Fracture of the Patella; secondary Amputation on the twenty-fifth day. Recovery.*

Eliza C., aged 34, servant, was admitted into the Meath Hospital on the 9th November, 1858. It appeared that in a fit of insanity she flung herself out of a lofty window, and sustained a compound fracture of the left patella, opening into the joint, and also a large contused and lacerated wound laying bare a considerable portion (at least the size of a half-crown piece) of the frontal bone on the right side. She was in such a state of mental excitement that amputation was out of the question; besides, the injury of the head was of so serious a nature that it alone would call for delay.

Fifth day. The whole limb was œdematous; the skin red above and below the knee, a putrid thin matter oozing from the wound, with high irritative fever. Professor Porter, who had then the charge of the case, dilated the wounds communicating with the joint; a long incision was made on the inside of the thigh, a second on the inside of the knee, and a third on the inside of the leg. Wine and opium were ordered.

Eighth day. Less local inflammation, and less fever; seems to be going on favourably; discharge from wounds fetid.

Twenty-fifth day. Has been running down with irritative fever, profuse perspiration, no sleep, although she gets a sedative draught; pulse 112. The injured portion of the frontal bone is exfoliating.

In consultation it was resolved to give the patient the only chance that remained, viz., amputation. She was so reduced that it was feared she could not bear the shock of so severe an operation. Amputation through the thigh, by the circular incision, was selected. The patient was exceedingly low subsequent to this proceeding, and was very sick for some hours after being put to bed. Ordered sedative draughts, wine and whiskey-punch.

Fourth day after amputation. Patient very low; profuse sweating; pulse never under 112 since the operation; no appetite; discharge from the stump putrid, and mixed with bubbles of air.

Seventh day. Stump going on well; she has had deep and extensive bed-sores, which are now beginning to clean, and granulate.

Twenty-third day after amputation, and forty-eighth after the injury. General health greatly improved; stump looks well, and is healing rapidly.

Thirty-seventh day after amputation. Stump nearly healed; general health restored; no signs of insanity. The patient was kept in the hospital till the end of February. She grew fat and strong, and was able to move about with the help of crutches.

Art. XIX.—*The State of the Medical Profession in Turkey.* Part III. By R. F. Foote, M.D., Constantinople; Member of the Imperial Medical Society of Constantinople; lately 2nd Class Staff Surgeon, Her Majesty's Service, attached to the Army of his Highness Omar Pasha, serving in Anatolia, Roumelia, and the Crimea, during the Russian War 1855–56; formerly Physician to the Norfolk County Hospital for the Insane, &c., &c.

(*Continued from* vol. xxvi. p. 44.)

In the latter part of the last article, I referred to the deaths and diseases. I shall now proceed to analyze the statistics more carefully. It will be noticed that, at the commencement of the statistical account, during three months ending on the 5th of November, 1855, 862 patients were placed under the treatment of our staff; and of these, 91 died. Although quite true, it only shows the mortality in the two hospitals taken together, and not that of the 150 cases of my own treated at the Palace Hospital, the general symptoms and treatment of which I am about to detail. Indeed, when we take the whole number of patients admitted during six months into this hospital, we shall arrive at a more correct account of the average mortality among 100 cases of scurvy admitted. Thus, of 608 patients received during six months, 100 were returned to their regiments as convalescents; 170 transferred to the Tent Hospital for further treatment; 160 died; 10 were invalided; 23 much improved, sent to their own homes by the authority of the Pasha, at the earnest solicitation of friends; 9 accident cases were cured; 10 were made hospital attendants; and the remaining number were in the hospital on our leaving for Seukhom Kalee in November, 1855. So that, if we take a per-centage of 25, we shall be nearer that which is correct. On the other hand, at the Tent Hospital, where nearly 800 soldiers were admitted in what may be termed the second stage of the disorder, 300 were returned as cured to their regiments; 300 were sent to the neighbouring villages as convalescents; 27 were made attendants; 15 died; 25 were removed to the Palace Hospital; whilst the remaining number either escaped to their

own homes, or were allowed to return by an order from the Pasha.

Scurvy is a well-known disease, which has, for many centuries, at various times, decimated armies and navies; and one would hardly expect to find so large a number of patients suffering from this disorder as occurred among the Turkish regiments, especially as they were close to their own shores, with a free sea communication, and with every facility in the country at hand to prevent its existence. I shall not, however, dwell on this subject, or on the history of scurvy, but rather proceed to state the symptoms which came under my own immediate observation.

The countenance was pale, bloated, and anxious; the gums swollen, and bleeding on the slightest irritation; the breath was generally very offensive. There was an inability to make the slightest exertion without great exhaustion; patients were unable to pass from the bath-room to the adjoining wards, in some instances owing to the stiffness of the joints, in others to extreme prostration and debility. When placed in bed, many appeared exhausted, and even dying. The skin was generally covered with patches or spots of a black or livid hue, as of petechiæ; whilst many had large spots of ecchymosis on the legs or arms, and frequently foul ulcers. The respiration was very hurried on the slightest exertion, and there was a good deal of dyspnœa. The tongue was clean, flabby, but indented at the edges. The appetite was often ravenous, or but little impaired. There was generally a craving for fruit and vegetables. Thirst was often a predominant symptom. In many there was much emaciation, but in the majority the body was but little reduced. Nervous irritability, restlessness, and general anxiety, were more or less observed. The urine was small in quantity, and generally reddish-brown in colour, as far as observations could be depended upon; but from the absence of proper vessels to receive it, and from the preference of the Turk, if possible, to go to the "memshaneh," water-closet, in preference to using any vessel in the chamber, accurate observations were generally precluded; whilst, in other cases, when the patients were not allowed to leave their chambers, the existence of diarrhœa and dysentery rendered the observations of little practical value.

Of these cases, more than 77 per cent. suffered from diarrhœa or dysentery; 75 per cent. from intermittent or remittent attacks; 10 per cent. from contraction of the knee-joint; and more than 5 per cent. from ophthalmic disorders, which appeared to have been very much neglected.

The *diarrhœa* was marked by flabby, clean tongue; pulse

very feeble. Alvine evacuations sometimes thin and colourless, resembling the evacuations of cholera; at other times bilious, and mixed with blood. Sometimes they terminated fatally, whilst others ran into an adynamic condition of dysentery.

The *dysentery* exhibited itself in a low adynamic type. The tongue was clean; pulse small and compressible. The evacuations contained shreds of the mucous coats of the intestine. There were much tenesmus and tenderness of the abdomen. For a longer or shorter period the bilious secretions had been disordered, and in all, some time during the attack, scurvy with diarrhœa existed.

In the progress of the more severe cases, copious effusions of fluid dark blood, with detached portions of the mucous surface of the intestines, have been noticed in the evacuations; with coldness and lividity of the surface. Discoloration of the skin, breaking out of old sores, falling out of the teeth, great loss of flesh, prostration of strength, terminating in death in 50 per cent. of the cases thus attacked.

The intermittent and remittent attacks characterized 75 per cent. In some, a regular cold stage, followed by heat, and terminating in greater or less amount of perspiration: all degrees, from a well-marked quartan or tertian to a mild case of remittent.

The cases complicated with bronchitis were indicated by difficulty of breathing and nervous depression rather than by cough, pain, or expectoration,—the latter symptoms being generally absent. Our attention being directed to auscultation and percussion, distinct bronchial affections were discovered. Towards the fatal termination, the breathing became more difficult; the patient was often unable to lie down in bed, with cold extremities, clammy sweats about the face and neck, and suppressed urine.

Latent or typhoid pneumonia was observed in four instances; and attention was directed to the thorax by similar symptoms to those in bronchitis at the commencement; but on percussion much dulness was found in the inferior lobes, with auscultatory signs of red or gray hepatization.

Abscesses existed in 4 per cent.; generally deep-seated, and occurring in the lower extremities.

Three patients in a dying state—one suffering from hydrothorax, one from typhoid symptoms, and one from general dropsy—died soon after admission.

I have stated that 78 per cent. suffered from diarrhœa or dysentery; but I must not omit to mention that typhoid symptoms were present in the fatal terminations.

Of the 101 cases of scurvy I shall now detail a few, noticing the principal symptoms, as illustrative of the whole; and afterwards mention the treatment, before proceeding to speak of the diseases admitted not complicated with scurvy:—

Case I.—Mehmet Ally, of the 4th regiment, 2nd battalion, a private, stated that he had been stationed for some months at Eupatoria, when admitted, August 11, 1855, to the Palace Hospital; that when well, his food was rice, brown, hard biscuit, with an occasional small quantity of dry salt mutton, and a small portion of fat (called butter); was taken ill two months ago, and immediately bled by the "Djerrah" of the regiment. He subsequently saw the medical officer, who ordered him to the hospital, where he was placed on quarter diet, and received medicine. Whilst in the hospital he suffered from diarrhœa, with ague,—the latter having set in three weeks after admission; upon which attack he was bled to the amount of 100 drachms; and on complaining, two days afterwards, of pain in the hypochondriac region, he was ordered 16 leeches. He stated also that he had been sent in the steamer from Eupatoria to Varna; that several hundreds of sick men were on board; and that no medical officer, medicines, or proper food, was provided—indeed, that with the exception of a hard brown biscuit, with which each man had been supplied on leaving the hospital, they had no food; that not even sufficient water was supplied; and that many of his friends died for want of a drop of water to quench their burning thirst. He had been, on his arrival, placed in a boat with many others; and on coming to shore, being unable to walk, was dragged to a bullock-waggon, and indeed beaten by the officer who was superintending the landing of the sick.

His present symptoms were as follows:—The skin was covered with petechiæ; countenance anxious; gums swollen, red, and ulcerated; pulse small and feeble. He complained of much pain in the calves of the legs, and the knees were greatly swollen, stiff, and contracted. The skin was cold; but he stated that towards evening in each day he became warmer, and that about midnight the perspiration broke out, but it was generally cold, and that he never became thoroughly warm. The bowels have been opened eight times during the twenty-four hours, the dejections of a pale colour, the urine high-coloured and acid.

12th, 8 o'clock A.M. Has passed a more comfortable night, and felt warmer, with more perspiration; the bowels relaxed four times since last seen, and more bilious in appearance, conjunctival injection, which was yesterday of a greenish hue, is

to-day more natural; skin is moist. The diarrhœa appears to be kept up by the want of any night-stool or other convenience of the kind in the room near his bed; ordered to take "pilaff" in the middle of the day.

13th. Much the same; no increase of fever or diarrhœa; "pilaff" not given.

15th. Daily improving; takes his food and medicine regularly.

16th. Ordered boiled vegetables with the soup.

17th. The gums more healthy in appearance; the petechiæ less distinct.

24th. No return of diarrhœa during the past week; gums nearly well; appetite good; pulse fuller and stronger; general appearance of countenance healthy; bowels open once daily; urine healthy; to take full diet, and be sent to the Tent Hospital in three days.

Case II. Usain Mahmet admitted February 10, 1855, suffering from scurvy, latent pneumonia, and diarrhœa, from the barracks, where he had been five days quite neglected; died three days after admission.

Case III. Mustapha Mahmout admitted July 7, with scurvy and dysentery; died on the seventh day after admission.

Case IV. Allih Achmet, for scurvy and diarrhœa, with intermittent tertian attacks, admitted July 10; discharged on the 25th to the Tent Hospital.

Case V. Mahmet Usain admitted July 9, with scurvy, diarrhœa, and intermittent fever; discharged to the Tent Hospital, convalescent, on the 24th.

Case VI. Hassam Ahmet, 6th regiment, 4th battalion, admitted July 9, from the Turkish Hospital; complains of scurvy, with pains in the legs and varicose left internal saphenus vein below the knee. On examination, a deep, indolent ulcer was discovered also in connexion with this; straps of adhesive plaster were applied, 1½ inches broad, and of sufficient length to encircle the limb, which was covered to an inch and a half above the ulcer and the same below, and over this a calico bandage was placed from the toes to the knee; he was discharged, August 9, to the Tent Hospital, convalescent.

Case VII. Hamza Abdullah, 6th regiment, 4th battalion, for scurvy and intermittent attacks, admitted July 9, discharged convalescing, August 7.

Case VIII. Mahmoud Ibrahim admitted into ward No. 3, July 9, suffering from scurvy, with diarrhœa and bronchitis; died on July 11.

Case IX. Mahmet Ahmet, of the 7th regiment, 1st battalion, admitted July 9, with diarrhœa; died 15th, at 2 P.M.

Case X. Fehret Ahmet admitted, July 10, to ward 3, suffering from scurvy, diarrhœa, and fever, with latent pneumonia; died three days after admission.

Case XI. Mahmet Becker, of the 6th regiment, had been at Sebastopol six months, where he was taken ill of diarrhœa, was sent to Eupatoria to the hospital, where he was three months sick with scurvy, diarrhœa, and intermittent fever; admitted July 9, suffering from the same maladies; discharged to the Tent Hospital, convalescent, August 7.

Case XII. Aly Saleyman, suffering from diarrhœa, scurvy, and ascites; admitted July 9, from Eupatoria, where he had been ill during two months. On the 18th abdominal effusion showed itself distinctly; much difficulty in passing some bloody urine.

28th. The dropsy was much diminished, having on the previous days passed much watery fluid by stool.

August 10th. Discharged to the Tent Hospital, convalescent.

Case XIII. Emmin Nesir, admitted July 8, from the barracks of the 3rd regiment and 1st battalion; had been ill five months with scurvy and ulcers on the calves of the legs; the ulcer of the right leg was about one inch in diameter, and in the centre half an inch deep; that on the left leg smaller in diameter, and less indolent in character; each, however, exhibited large, flabby, indolent granulations.

26th. Having rapidly improved, and the ulcers having nearly filled up, he was discharged to the Tent Hospital.

Case XIV. Mustapha Mehmet, of the 6th regiment, 4th battalion, scurvy, with abscess over the upper portion of the sternum, and slight diarrhœa; admitted on the 9th July; died on the 18th.

Case XV. Saleyman Mustapha, 6th regiment, 4th battalion, suffering from scurvy; admitted July 9, discharged August 7, to the Tent Hospital.

We thus had to treat patients suffering from scorbutic diathesis, with tendency to diarrhœa and dysentery, combined with great nervous prostration, intermittent tendency, and an unhealthy condition of the skin.

Our dietetic treatment, which, although of very great importance, yet, owing to the bad arrangements, gave us much difficulty, was as follows:—At first the patient's food was supplied

at half-past 7 in the morning, and at 5 in the afternoon; however, by great perseverance, we were able to give them a meal also at mid-day.

In all the cases admitted, vegetable diet at the onset produced evil effects; lemon-juice, unless combined with an alkali, acted prejudicially; fruit and green vegetables produced the same effect, the latter less when cooked; nor should we be surprised to find it the case when we consider that many of our patients had for months been deprived of any sort of vegetable diet in a fresh state, and that for several days prior to admission they had taken scarcely any food whatever; in fact, they were in a state often of starvation on admission.

Rice, bread, and mutton being the staple articles of food of the Turkish soldier at Eupatoria, they were chosen as best suited to build up his constitution for the receiving of more appropriate dietetics. Hence, weak broths, made of rice and mutton, with bread soaked in it, were given in the morning, and "pilaff" at noon; the latter is a composition of well-cooked rice with butter, and is most grateful to an eastern stomach; or "mahalebby," a composition of flour and grease or butter, with milk. As the bowels became secure, boiled vegetables were added to the soup; lemon-juice and lime-juice were given as lemonade or "imperial," a drink composed of bitartrate of potash, made sweet with sugar, and flavoured with lemon-peel. However, it was found that whenever these drinks were administered in the early residence of the patients, a higher mortality was the result; and whenever the sick patients obtained, as they did, fruit from the vendors in passing from the pier to the barracks or hospital, a larger mortality took place than among those who refrained or who were prevented indulging in such.

As convalescence progressed, salads were ordered with much advantage.

In speaking of the peculiarity of the medical treatment as tending to the great amount of scurvy at Eupatoria, we of course include the dietetic and hygienic arrangements, which were extremely bad, and I feel certain that no one who has had much experience in hospital management can doubt the absolute necessity of pure air being insured in an hospital where the health and lives of the patients are considered of the primary import; but in order that these shall be properly and efficiently carried out, the medical officer in charge must hold a similar position to the captain of a large vessel, with this exception, that he must have also a knowledge of medical treatment.

The condition of an hospital which will please the eye of a casual observer in the middle of the day, when every part is cleanly and in order, is not sufficient; the regular observer notices accurately the supply of clean linen, of bed-pans, movable water-closets, means for bathing patients, proper and efficient supply of water, the cooking of the food, the regularity in all parts; and every one who has patiently observed knows full well that the influence of these different agencies determines often the effect of the various remedies.

Of the therapeutical agents used with advantage, we may mention the citrate of potash, nitrate of potash, bitartrate of potash, and chlorate of potash. The citrate of potash produced the most beneficial effects, and was often sufficient to bring about rapid recovery. When pains of the extremities existed, preventing sleep, Dover's powder, morphia, or extract of henbane, were administered at bed-time; in a few days, the worst symptoms having disappeared, the condition of the gums was relieved by an alum gargle, or, in the worst cases, by painting them with nitrate of silver.

On an assurance that no symptoms of diarrhœa would take place, boiled vegetables, &c., were ordered. When constipation took place, the tartrate and bitartrate of potash, combined with an aromatic, acted well. In some instances, where effusion appeared to arise from inactivity of the kidneys, the combination of nitrate of potash acted beneficially, and when the effusion into the areolar tissue around the knee-joint assumed a chronic form, iodide of potassium, combined with infusion of quassia, acted well. When patients were admitted in a state almost amounting to collapse, they had a mixture composed of a drachm of chlorate of potash, an ounce of syrup, and five ounces of distilled water, a fourth or fifth of which was administered before removal from the bath; or one composed of one ounce of compound spirits of ether, half an ounce of aromatic spirits of ammonia, and five ounces of camphor mixture, of which two or three table-spoonfuls were given as a dose.

Diarrhœa.—In all complications of scurvy with diarrhœa, the dietetic treatment from the commencement was of great importance, the administration of milk and rice with sugar, as containing the principal substances of which the blood was in need, and, by their emollient properties producing no irritation upon the intestinal canal. To try the effect of various medicines and food upon patients on admission, we took 25 patients suffering from scurvy, and some few of them had diarrhœa in a mild state. We took other 25 cases, the same in every particular to the first 25 patients; a good supply of lemon-juice

was ordered daily with salad and vinegar. Of these 23 per cent. died within seven days after admission, whilst the other cases, treated as before described, but 8 per cent. died; whilst of the former cases the length of time for becoming convalescent was increased 25 per cent.

The ordinary medicinal remedies on admission were three to five grains of Dover's powder every three hours, or, where the diarrhœa was very frequent, after each relaxed motion at the same time was administered chlorate of potash, with decoction of cinchona or nitrate of potash, when it was necessary to stimulate the kidneys at the same time. The compound powder of kino, of the London Pharmacopœia, was also given with much advantage. When pain on pressure, or even colic, was present, the application of turpentine on hot flannels proved highly beneficial, or mustard cataplasms. In some instances spongio-piline with hot water afforded great relief. This substance must be considered a most valuable introduction in the cleanly treatment of medical cases. It does away entirely, to my mind, with the dirty application of cataplasms, whose chief benefit arises, I firmly believe, from the heat and moisture which they convey to the affected part.

As the symptoms of diarrhœa subsided, quina or quinoidine was given in combination with nitric acid, or, where congestion of the liver was of marked importance, nitro-muriatic acid was rather preferred, with or without Battley's solution of opium.

The dysentery was treated by much the same method as the diarrhœa, with this exception, that whenever dysenteric symptoms made their appearance, a hot cataplasm of turpentine was applied over the whole abdomen, and ten grains of Dover's powder immediately given, taking especial care that the patient should not be allowed to leave his room: in several cases chlorate of potash was given in addition.

In many cases distinct enlargement of the liver and spleen was observed, and the application externally of tincture of iodine was often of much benefit over the region of these viscera.

In the treatment of the cases of bronchitis and pneumonia, our attention was directed to counter-irritation in the thoracic region by tincture of iodine, the tartar-emetic ointment and blisters not being admissible, from the tendency to the formation of foul ulcers. We had also recourse to the internal administration of diffusible stimulants and chlorate of potash, to assist in purifying the poisoned blood; and we endeavoured, by means of citrate of ammonia combined with ipecacuanha, to

produce increased secretion to the skin. Cupping, bleeding, leeching, calomel, antimony, were in each case contra-indicated by the feeble pulse, the anxious countenance, the scurvy gums, and diarrhœa. Cough, when it existed, was relieved by henbane, hemlock, and even paregoric.

(*To be continued.*)

Art. XX.—*On the Natural Constants of the Healthy Urine in Man.* By the Rev. Samuel Haughton, F.R.S., Fellow of Trinity College, Dublin.

[We publish the following Table, in anticipation of Mr. Haughton's paper on the "Natural Constants of the Healthy Urine in Man," the first part of which will appear in our next Number.—Ed.]

Table *derived from Experiment, showing the relation between the Specific Gravity of Healthy Urine, and the Quantity of Urea contained in it.*

Specific Gravity of Urine.	Grains of Urea per oz. of Urine.	Specific Gravity of Urine.	Grains of Urea per oz. of Urine.
1010·0	. . .	1020·0	12·2
1010·5	. . .	1020·5	12·4
1011·0	. . .	1021·0	12·6
1011·5	. . .	1021·5	12·9
1012·0	. . .	1022·0	13·1
1012·5	5·0	1022·5	13·3
1013·0	5·7	1023·0	13·4
1013·5	6·6	1023·5	13·5
1014·0	7·2	1024·0	13·7
1014·5	7·8	1024·5	13·8
1015·0	8·4	1025·0	13·9
1015·5	8·8	1025·5	13·95
1016·0	9·2	1026·0	14·0
1016·5	9·6	1026·5	14·0
1017·0	10·0	1027·0	14·0
1017·5	10·4	1027·5	14·0
1018·0	10·9	1028·0	14·0
1018·5	11·2	1028·5	13·95
1019·0	11·5	1029·0	13·9
1019·5	11·9	1029·5	. . .

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Medical and Surgical History of the British Army which served in Turkey and the Crimea during the War against Russia. Blue Book, 2 vols. 4to. 1859. Presented to both Houses of Parliament by command of Her Majesty.

It is not our present purpose to enter upon a detailed analysis of the contents of these volumes; we shall, therefore, confine our remarks chiefly to the first volume, and to an account of the general hospitals, which have received no separate notice in this history of the medical transactions of the war.

The volume before us contains abstracts from the medical reports of each regiment of cavalry and infantry actually employed in the field, followed by a table of the admissions and deaths in the regimental hospitals, by months, while a separate column shows the deaths in the general hospitals, or elsewhere, with their causes, in so far as these were ascertained, during the whole period.

As these abstracts and tables constitute the groundwork on which the whole superstructure rests, it is to be regretted that similar returns were not given for the artillery and engineers, as we are thus left in some doubt as to the proportion of the ordnance corps dying in regimental and general hospitals respectively.

In the following statement, compiled from these regimental tables, we have included the Land Transport Corps, because many men of this corps died in the general hospitals. The first column shows the total deaths (exclusive of killed in action, 2755) in each arm of the service, and the second the number of these deaths which took place in the general hospitals and elsewhere:—

	Total Deaths.	In General Hospital and elsewhere.
Infantry, ...	15448	6447
Cavalry, ...	1054	377
Ordnance[a], ...	1447	578
Land Transport Corps,	477	119
Total, . .	18426	7521

From this statement it appears that 10,905 men died with their regiments; but 126 of these deaths (97th and Buffs) took place at the Piræus, leaving 10,779 as the actual deaths in Turkey and the Crimea.

No better proof can be offered of the arduous hospital duties devolving on the medical officers in the field; and when we add to these the duties in the trenches both night and day, with the exertions necessary to procure comforts for the sick, and the *desagrémens* of a winter encampment, we cannot but admire the fortitude and endurance of those officers.

Before being lost in amazement at the amount of this deplorable mortality, we must recollect that 4000 of these deaths were caused by cholera, and a very considerable number by wounds and accidents immediately fatal, all of which necessarily took place among the forces in the field.

The regimental abstracts and returns are exceedingly valuable to the etiologist, as showing that the rate of mortality differed greatly among regiments subjected apparently to the same privations, and performing similar laborious duties; and further, that this mortality did not always arise from the same diseases. However, in only five of the thirty-one batallions of infantry which landed at Old Fort was fever more fatal than dysentery and diarrhœa; in all the others the latter were the most mortal diseases, and in a few the proportion was from three to four-fold, excluding cholera.

As a general rule, those regiments most actively engaged in the duties of the siege during November, December, and January, suffered most; and the returns of the three battalions of Guards and the 63rd regiment show how suddenly the mortality abated when these corps were withdrawn from the front in February, 1855. It is only by an attentive consideration of all the circumstances, in the several cases, that we can hope to ascertain the true causes of that mortality, but such a task is far beyond our scope, so we shall content ourselves with a sin-

[a] The deaths in the Ordnance are taken from the General Returns, vol. ii, pp. 44 and 387.

gle contrast which exhibits the comparative effects of a winter siege, and of a residence in the foulest locality, combined with the risk of contagion, as causes of mortality.

The 89th regiment landed at Balaklava on the 19th of December, and marched to the front to enter upon the siege duties. It encamped upon a dry elevated spot, with excellent water at hand; but the rations were salt meat, biscuit, and rum, without firewood, which was difficult to procure, and the men were detailed for duty in the trenches in their usual clothing. Here "forty cases of cholera were presented between the 19th and 31st of the month, all of which proved fatal." In short, the 89th had lost 119 men by disease, exclusive of killed and wounded, before the 1st of May, 1855.

The 71st regiment, first division, landed at Balaklava on the 20th (18th?) of December, 1854, and for about ten days was encamped "close to the Turkish burial-ground." On the 27th, 417 men moved into Balaklava, taking possession of dilapidated houses. The rations were salt meat, biscuit, and rum, until after the 1st of January, when fresh meat, potatoes, and compressed vegetables were issued two or three times a week, and there is no complaint about firewood. When not on guard the men were employed in road-making, landing stores, and giving orderlies to the Balaklava hospital and to the transports conveying the sick to Scutari. The remainder of the regiment arrived on the 7th of February, and was first encamped, and afterwards hutted, three-quarters of a mile outside Balaklava, but the head-quarters continued in the town. In fine, this regiment, chiefly stationed in a locality said to have been dangerous to the health of the whole army, had lost twenty-seven men by disease, exclusive of killed and wounded, before the 1st of May, 1855. On the 3rd of May the regiment embarked for Kertch, re-landed on the 8th, and next day marched to the camp before Sebastopol, where it encamped, near a large burying ground, in wet weather. The camp was changed to drier ground in three days, but the men had to guard the trenches, and were only two nights in bed. It embarked again for Kertch on the 22nd of May, and by the end of this month had lost twenty-six men by disease.

These regiments were selected for this comparison because they landed about the same time, and their average strength during the four and a half months, to the 1st of May, only differed by seven men.

It appears by the table given above that 7521 deaths among men belonging to the several arms of the service took place in general hospitals or elsewhere, but 71 men who perished by

drowning, cold, suicide, and accidents, or were found dead, besides 22 men of the Land Transport Corps who died at Kertch, where there was no general hospital, and also 1311 who died on board the transports, must be deducted from that number, leaving 6117, belonging to the army in the field, to be divided among all the general hospitals. It is true the deaths in the Artillery and Engineers in the general hospitals have been computed at two-fifths of their total deaths; but any understatement, as regards the Ordnance, would be fully compensated by men dying in the hospitals of other regiments. For example: 14 men of other corps died in the 4th hospital at Gallipoli, and 23 French, civilians or prisoners, died in the camp hospital. As all the 345 deaths set down in the general return[a] as unknown are included, we are justified in assuming that these 6117 deaths comprise all men belonging to the army dying in general hospitals.

The returns from the various general hospitals show that this mortality was distributed as follows, viz.:—

General hospitals in the		Crimea, ...	738
,,	,,	Varna, ...	374
,,	,,	Abydos, ...	82
,,	,,	Smyrna, ...	154
,,	,,	Renkioi, ...	50
,,	,,	Scutari and Kululi, . .	4719
		Total, . .	6117

In the volumes before us no special notice has been taken of the general hospitals, and we cannot hope to supply so serious a deficiency in the medical history of the war, but, having collected from the returns the total deaths out of each regimental hospital, and shown their distribution by means of the general hospital returns, we may cast a passing glance on the latter establishments, and compare the mortality from wounds, and one or two of the principal diseases in the Scutari hospitals, with that in the general return for the army at the same periods.

The general hospital in Balaklava was opened in October, 1854, for the reception of soldiers, sailors, and employés of all kinds. It appears at times to have been overcrowded, and from the previous habits of its inmates was difficult to manage, but early in 1855 it was got into order. The site of the town, it is said, could "not be considered as naturally healthy," and the margin of the harbour nearest the town soon became "a

[a] Vol. ii. p. 253.

mass of organic matter, consisting of filth, stable manure, the bellies and offal of slaughtered animals thrown overboard, amongst which had been embedded numerous carcases of dead animals[a], producing the most horrible smells;" and the hospital latrines were in bad order. But there had been frequent lime-washing, and the ventilation was good if the external atmosphere was impure. Fever was prevalent here from December to March, and the mortality averaged 10·7 per cent. for this period, and 7·7 per cent. on the whole occupation, a trifle lower than at Renkioi. Cholera caused nearly one-third of the total deaths in this hospital, yet the average mortality on the admissions, from all diseases, was 7·7 per cent.

The Castle, Camp, and St. George's Hospitals, opened in March, April, and July, soon became model temporary hospitals, and the rate of mortality in all three averaged 7·2 per cent.; but when we take them singly, their rates of mortality were widely separated: that of St. George, for convalescents, being 3 per cent.; that of the Castle, 3·7 per cent.; and that of the Camp Hospital, 18·9 per cent.

As no forcible objection has been raised either to the site or construction of any one of the three, we must seek the causes of this remarkable difference elsewhere. When we deduct the admissions and deaths from gunshot wounds from the Castle and Camp returns, we at once reduce the difference in their rates of mortality from 15·2 to 5·1 per cent., a convincing proof that wounds and diseases of the gravest nature were humanely taken to the nearest hospital.

In the hospital at Abydos, opened in December, 1854, no death took place after June, 1855, and in this, perhaps, "the least adapted for hospital purposes of all the buildings in the British occupation"[b], the average rate of mortality was only 10 per cent.

The hospital at Smyrna received 1498 patients from the Crimea, after the 9th of February, 1855, though the total in the return is 1887; and the total deaths were 154.

The hospital at Renkioi received the first patients from the Crimea on the 2nd of October, 1855, and the last on the 10th of February, 1856, in all, 1122; but the total admissions were 1330, and the total deaths 50, of which 9 were from intermittent fever, in 38 admissions.

The hospitals in Scutari were opened in June, 1854, and before the end of August had admitted 1257 patients, among whom were a few cases of cholera from the Fourth Division,

[a] Report of the Eastern Sanitary Commission, p. 88. [b] Ibid., p. 60.

detained on board the transports in Beicos Bay to avoid the sickness in Bulgaria, yet the mortality during these three months was only 3 per cent.

A new era, however, commenced in September, and between the 21st and 30th, 3166 sick and wounded arrived from the Crimea. To meet this sudden emergency, we learn from the Report of the Sebastopol Committee that Dr. Menzies had under his orders twenty-two medical officers, an aged apothecary, and a still more aged and infirm purveyor. He detained medical officers sent down from the Crimea, he accepted aid proffered by the navy, and ere long he was begging bedding and furniture from the Turks.

After a brief remission in October, the torrent of sick resumed its flow; bringing down, in the end of the month, the wounded from Balaklava, to be immediately followed by the far more numerous wounded from Inkerman in November.

Many a surgeon of infantry in the Crimea dates the breakdown in the health of his corps from the disastrous storm of the 14th of November, and from that time the influx of sick at Scutari was even more overwhelming than the previous influx of wounded had been, all sent away from dire necessity, in consequence of the insecurity of the position before Sebastopol. Thus the Scutari hospitals received all the wounded from the fields of Alma, Balaklava, and Inkerman, and all the sick who survived the voyage, until the small hospitals at Abydos and Kululi were opened, about the middle of December, 1854. But there was no respite from the appalling inundation until February, when a decided improvement took place in the health of the army; and the hospital opened on the 10th, at Smyrna, gave some relief.

That under a combination of circumstances, almost without a parallel, the wants at Scutari must have been great and pressing, no reasonable man can doubt, but aid of all kinds had been coming in from all quarters, and the real difficulties had been overcome in February.

In the mean time the hospital returns had got into inextricable confusion; and we see[a] no less than 2957 admissions, and 411 deaths set down as unknown, the latest in February.

From this chaos we appealed to the regimental returns as combining the information of the orderly room, the paymaster's office, and the hospital, and by subtracting the deaths in the other general hospitals, nearly all established after the pressure, and those on board the transports, where the military and

[a] Table I, vol. ii., p. 481.

medical returns were checked by the ship's returns, leaving all still unaccounted for against Scutari and Kululi, it appears that the maximum deaths, in the various arms of the service included in our table, could not possibly have exceeded 4719 in these hospitals, but we are unable to fix the periods at which those deaths took place in a great majority of the corps.

The returns of the various transports show that 29,874 sick and wounded officers and men were embarked from the Crimea, and 1311 died on board ship (all but 50 before April, 1855), and 3282 were landed at other hospitals; 25,301 must have arrived at Scutari, two-thirds of them before April, 1855. Had all the deaths among the men belonging to the army (in Scutari and Kululi) occurred among those sent down from the Crimea, the rate of mortality must have been 18·2 per cent., but we know that 38 men had died at Scutari before the Crimean expedition, and others, no doubt, were landed to die there from transports on the outward voyage.

If we take the principal diseases which caused this mortality, and compare the death rates in the hospitals on the Bosphorus[a] with those in the General Return for the Army[b], we find that the rate from fevers at Scutari was 10 per cent., and for the army 11 per cent. during the whole war. For the six months from October, 1854, to March, 1855, when Scutari was said to be at its worst, the rate there was 19·4 per cent., and in the army 24·1 per cent.; and for the single month of February these rates were 30·8 and 38·8 respectively.

In each instance the rate of mortality has been calculated on the *admissions only*, for the periods specified, and therefore the variations are considerable from one period to another. In February, however, in each 100 deaths (excluding the unknown) 20·9 were from fever at Scutari, and in the army 27·4; so that fever was actually less fatal at Scutari than in the army in general, though these deaths were at their maximum in both in this month.

When we come to the 2962 gunshot wounds admitted at Scutari between the 21st of September and 31st of March, the rate of mortality was 10·3 per cent.; whereas in the general return for the army it was 17 per cent., but the latter includes all wounds necessarily and speedily mortal, none of which would reach Scutari.

Although the wounded were so numerous, there were only 9 cases and 4 deaths from erysipelas during the six winter months, and 15 deaths from gangrene—no great number, when we con-

[a] Table I, vol. ii., p. 481. [b] Table A, vol. ii., p. 253.

sider that the sufferers had been subjected to the hardships of a sea voyage in ill-prepared transports, with attendants who were likely to have suffered from sea-sickness.

What were the diseases, then, which gave to Scutari its notorious celebrity for unexampled mortality? The answer is clear and simple, namely, frost-bite, dysentery, and diarrhœa, besides gunshot wounds.

The mortality at Scutari from frost-bite was 34·5 per cent. on the admissions, and in the army 19·3 per cent.

During the six months from October to March inclusive, 2320 patients died at Scutari and Kululi from dysentery and diarrhœa, the mortality amounting to 37 per cent. on the admissions; whereas in the army for the same period it was 22·9 per cent. As nearly all the cases came from the Crimea, about five-sixths were on admission suffering from the chronic forms of these diseases,—a fact which precludes the possibility of their having originated at Scutari, whatever may have been the sanitary defects of these hospitals,—it would be a waste of time to set down the rates of mortality on the admissions by months, or to calculate these rates on the supposition that half the admissions, discharges, and deaths, can represent the "cases treated" in an hospital where some thousands of sick remain over from month to month. Such methods of calculating the rates of mortality being of necessity more dependent on the numbers admitted and discharged than on the lesser number dying in a particular time, too often displace the maximum death-rate, though both *must hit upon the truth* when an hospital is closed empty.

However, in each 100 deaths at Scutari (excluding unknown) in January, 1855, nearly 70 were from bowel complaints, and in February, 51. The greatest number of deaths in the army in any month during the war also occurred in January, very nearly two-thirds of which were caused by dysentery and diarrhœa.

The mortality from pulmonary diseases and rheumatism was also rather greater at Scutari than in the army, in proportion to the admissions, but both contributed only 8 to each 100 deaths, and the unexampled mortality at Scutari could not have arisen from these diseases.

When we revert to the returns, we find that in the army the admissions with fever were more numerous in October than in November, but they suddenly rose in December, and continued to increase until March, though the mortality had attained its maximum in February. In the hospitals on the Bosphorus, fever began to increase in November, and rose rapidly until

January, but more slowly until March, when the admissions were most numerous, and here it had also attained its highest rate of mortality in February.

The admissions with dysentery and diarrhœa were most numerous in the army, and also at Scutari, in December, 1854; and the mortality in both places was greatest in January, 1855, when these diseases caused 2031 out of the 3168 deaths in the army during this month.

The heavy mortality at Scutari during the winter of 1854-5 has been too confidently attributed to the sanitary defects in these hospitals, and its subsequent diminution to their removal. But we have seen that the mortality averaged only 3 per cent. during the first three months these hospitals were occupied. The improvement in the health of the army before Sebastopol in February, 1855, has been acknowledged by all; and in consequence of the hospital at Smyrna being opened in this month, six transports carrying 931 sick were sent there, after landing the worst cases at Scutari. There was a great diminution in the admissions, therefore, at Scutari, while the mortality was adventitiously augmented; but we learn from Lord William Paulet's letter to Lord Panmure (25th April, 1855), that "in January last the number of deaths was 1480, in February, 1254, and in March, 424," so that the mortality was decreasing too rapidly to be reasonably ascribed to sanitary improvements begun on the 17th of March.

On the establishment of the Castle and Camp general hospitals in the Crimea in March and April, other efficient causes came into operation, for the wounded sent down to Scutari were convalescent before they embarked, and of the 315 deaths from gunshot wounds at the latter, only 7 took place after April, 1855.

Of 280 deaths at Scutari, from frost-bite, only 7 occurred after April, 1855.

If the mortality from dysentery and diarrhœa at Scutari fell from 2220 during the six months ending with March, 1855, to 276 in the subsequent period, it also fell in the army from 5151 in the same six months to 663 during the remainder of the war.

The deaths from fever at Scutari during the six months of the first winter were 644, and afterwards 189; whereas in the army generally they were 2048, and 1037 respectively, proving that Scutari still held out the same superior chance of recovery as at the most sickly period.

We do not mean to deny that sanitary defects existed at Scutari, which should never exist in any permanent hospitals,

but these must have been in a great measure removed, while *sanitary improvement was still in its infancy*, for Lord W. Paulet, writing to the Secretary for War on the 25th of April, 1855, says: "I may confidently assert, as regards the general condition of these hospitals, that they surpass in cleanliness and comfort any I have seen in England or elsewhere, and this opinion is corroborated by the various and enlightened individuals, both English and foreign, who have visited them."

Our medical brethren who laboured with such noble devotion in the Irish hospitals in 1847–8 are far better qualified than we are to decide how much of the mortality of that calamitous time was due to sanitary defects in these hospitals, and how much to the malignity of the then prevalent diseases? Their verdict will be a judgment against which there can be no appeal as regards Scutari in the winter of 1854–5.

That from February, 1855, watchful nursing and abundant comforts smoothed the rough path to the grave, and in some instances stayed the hand of death, we firmly believe. But that dysentery and diarrhœa, the causes of half the mortality at Scutari during the winter, having not only ceased to be fatal, but even frequent, at the source of supply in the Crimea, they should not likewise cease to be fatal and frequent in the hospitals on the Bosphorus, no experienced practitioner can for one moment doubt.

We accordingly see that, after the terrible destroyer had passed by, the mortality at Scutari returned almost to the same low rate as during the three months before his appearance, and it is with these three months alone that the results of sanitary improvement can with any justice be compared.

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1. *Om intagna Läkemedels afsöndring utur Organismen.* Af Dr. Sten Stenberg. Upsala: Wahlström och C., 1858. 8vo, pp. 88.

   On the Elimination of Internal Medicines from the System. By Dr. Sten Stenberg.

2. *Blick på Ethnologiens närvarande Ståndpunkt med afseende på Formen af Hufvudskålens Benstomme. Foredrag vid det skandinaviske Naturforskerselskaps 7de Mote i Christiania*, 1856. Af Andreas Retzius, Professor vid det Carolinska Institut i Stockholm. Christiania: Trykt hos Carl C. Werner och Comp, 1857. 8vo., pp. 43.

A Sketch of the Present State of Ethnology with reference to the Form of the Skull. An Address delivered at the Seventh Meeting of the Scandinavian Society of Naturalists at Christiania in 1856. By ANDREW RETZIUS, Professor in the Carolinean Institute in Stockholm.

3. *Berättelse om Undervisningen vid Kongl. Karolinska Medico-Kirurgiska-Institutet under Läsåret* 1857-58. Stockholm: P. A. Norstedt och Söner, 1858. 8vo, pp. 8.

Report on the Instruction delivered in the Royal Carolinean Medico-Chirurgical Institute, during the Session 1857-58.

4. *Om senaste Försöket att vanställa Ortopedién och hos Allmänheten inplanta Fördomar mot Gymnastiskt-Ortopediska Institutet.* Stockholm: Tryckt å Aftonbladets tryckeri. 1858. pp. 116.

On the latest Attempt to disparage Orthopedics, and to prejudice the public against the Gymnastic Orthopedic Institution.

AFTER some preliminary observations, Dr. Stenberg remarks that in the investigation of the elimination of non-volatile medicines from the system, it is in most cases only necessary to direct attention to the urine, the solid excrements, and the perspiration; and that in quantitative examinations it is sufficient to test the first two as to the amount of the substance in question which they contain, whence the quantity passing off through the skin can subsequently be indirectly deduced; further, that the saliva and the milk, when they occur as excretions, must be also examined; and, lastly, that in the case of volatile remedies, not only the above excretions, but also that from the lungs, must be taken into consideration.

But even the merely qualitative examination of the excretions is capable of affording us information of much value, in both a theoretical and a practical point of view: thus it may show us whether a medicine which has been taken passes unchanged out of the body, or whether it undergoes decomposition in the system, and whether one or more of the products of its decomposition may be recovered in the excretions, and their nature determined; further, whether a medicine is, at a certain period, separated from the system or not, and, in the former case, with what excretion or excretions it is principally eliminated; and, lastly, what length of time elapses after the ingestion of a remedy, before it shows itself in the excretions, and how long it continues to manifest itself in the latter.

By such investigations we arrive at a knowledge of the chemical powers of the constitution. Thus Wöhler ascertained that vegetable acids, when combined with alkalies in the form of neutral salts, are converted in the system into carbonic acid, but that, when not so combined, they undergo no such change. Ure, Heller, and others, demonstrated the metamorphosis of benzoic into hippuric acid in the organism. In the former case the oxidation of the carbon and hydrogen of the acids, forming carbonic acid, which combines with the alkali to constitute a carbonate and water, is so energetic, as to render the urine alkaline in from half an hour to two hours after the ingestion of the salt, or within a few minutes, if the latter be introduced directly into the mass of the blood. Hence the advantage of administering such salts in cases in which urinary deposits result from an excessive secretion of acid, is at once apparent.

The author considers medicines, in reference to their elimination from the system, under two heads: those of inorganic and those of organic origin. The substances treated of are, however, so numerous that the volume scarcely admits of analysis; but we may observe that Dr. Stenberg has, with great industry, brought into the form of an useful compendium the results of the labours of the distinguished investigators in the several countries of Europe who have written on the subject of his work.

2. In the second work on our list the distinguished author publishes numerous facts which the lapse of time had brought before him, from various quarters, in confirmation of the views he had advanced, twelve and fourteen years previously, at meetings of the Scandinavian Society of Naturalists. He had then shown that the majority of the people of the west of Europe were dolichocephalous, while the brachicephalous was the prevailing form throughout the great extent of the eastern portion of the Continent.

Since the date of his former communication, Professor Retzius had an opportunity of examining a considerable number of individuals, descended from Norman families in France and England. These persons had, without exception, preserved the oval shape of the skull, which belongs to the genuine Normans in Norway.

The same form was found in hundreds of Swedish skulls, examined both in old churchyards and in the dissecting-room.

The Germanic dolichocephalic form was also found well

marked in Copenhagen, both in a number of skulls in the museums of that city, and in the heads of a large number of Danes. The same shape prevails in Holland and Belgium.

"In the course of a journey through Great Britain in 1855, I again had an opportunity of convincing myself of the general prevalence of the dolichocephalic form, both in England and Wales, and in Ireland and Scotland. The majority of the latter dolichocephalous individuals are dark-haired, and are probably Celts."

The author points out that "among ancient statues, Apollo, Venus, and several of the noblest characters, have the dolichocephalic form; while others, on the contrary, as Jupiter and Hercules, exhibit the brachicephalic; probably owing to difference of race in the individuals whom the artist chose as models."

A curious fact connected with this subject is, that "all the people of Africa are dolichocephalous. This circumstance, to which I have already, on several occasions, directed attention, and which, so far as I am aware, has not been disputed by any one, is quite peculiar to this part of the world. Europe, Asia, the South Sea Islands, and America, exhibit races of both forms. Europe, and particularly Asia, possess a great preponderance of brachicephalic population. The South Sea Islands have, I believe, both forms in about equal number, but with a marked preponderance in favour of the brachicephalic; Africa, so far as is yet known, is without a trace of brachicephalic population."

The foregoing may suffice to show how much interest Professor Retzius imparts to what has often been considered a *dry* subject; a subject, however, which the investigations of this eminent physiologist, and those of other modern labourers in the same field, have proved to be quite the reverse, at least in one sense of the term.

3. The Report on the Instruction delivered in the Royal Carolinean Medico-Chirurgical Institute, during the session 1857-58, contains some interesting information. It appears that the number of medical students at the Institute during the above-mentioned period was 122. The subjects of the lectures of each Professor, with the number of pupils attending each class, are stated. The additions to the library and museum are enumerated. Among the donors to the former are, His Majesty the King, the College of Surgeons of England, the Pathological Society of London, the Universities of Christiania and Berlin, &c.

4. The pamphlet whose title stands last in the heading of this article appears to be a reprint of a newspaper controversy, into the subject of which we have no desire to enter.

General Debility and Defective Nutrition: their Causes, Consequences, and Treatment. By Alfred Smee, F. R. S. London: Churchill. 1859. 16mo, pp. 98.

Debility—what an expressive, comprehensive term! what a world of meaning is there! Debility! which of us is there that has not at times suffered from it; and that has not repeatedly in his practice been called on to treat it?—debility not arising as the result of some special disease, but being in itself the *fons et origo mali*. Which of us is not familiar with the wretchedness, the malaise, the incapacity for the ordinary pursuits of life, the apparently unaccountable position of the patient labouring under its effects, and occasionally his almost hopeless condition,—hopeless, from the abortive results that have hitherto attended the treatment to which he has been subjected—abortive, because no rational cause has been assigned for his symptoms.

These, and many other similar reflections, were aroused in our mind by the perusal of the work, the title of which heads this article—a work springing from the pen of a gentleman already deservedly occupying a high position amongst his professional brethren for the very scientific character of his previous writings, and for which we are indebted to the fact of his having been selected to deliver the Oration of this year before the Hunterian Society, for the subject of which he chose the consideration of the phenomena presented by general debility. That the subject should be treated in a more cursory way than perhaps our author would have wished, is but to be expected from the circumstances under which the observations were delivered; in an ordinary oration it is scarcely to be anticipated that full justice could be rendered to so important and extensive a subject. Did Mr. Smee merit no higher meed of praise at our hands than that of having drawn the attention of the profession in a marked manner to this important lesion, he still would have placed his professional brethren under an additional obligation to him; but that he has done more, far more, we are free to confess, and our only object in making this remark is to induce him at some future date to give us the results of his experience in a more extended form.

Mr. Smee's work is divided into six chapters and an appen-

dix; and we shall now, without any further preface, venture to draw the attention of our readers to some of the many important topics contained in each of them.

The first chapter opens with some well-put analogies between the phenomena of ordinary combustion and those of human life, after which are enumerated the elements which enter into the composition of the food of man; and these are again grouped into four classes; after which follow some most important observations as to the value of deciding, as accurately as the present state of our knowledge will admit of, the requisite amount of those elements that should be ingested, and their equivalent in food. To assist in the determination of this question, a knowledge of the amount of eliminated matter becomes necessary; and with this view, Valentin and Bernard's statements on these points are quoted; and the author alludes to some experiments conducted by himself on the dead body, to point out the way in which different fluids are transmitted from the bloodvessels to various tissues of the body, with the view to their reparation—experiments that would tend, in some measure, to support the physiological views formerly entertained by Descartes, Leibnitz, and Quesney. The value of sleep, and the important part played by the nervous system, are alluded to, and the chapter concludes with the following passage:—

"We thus find, by studying man through the medium of physical science, that the medical practitioner obtains four bases for the practical estimation and treatment of disease. 1st. The limits of variation of food required for daily sustenance. 2nd. The limits of variation of the egesta which must be daily removed. 3rd. The limits of variation of sleep. 4th. The limits of variation of nervous power, heat, and muscular force which can daily be produced. A study of these gives to the mind fixed points for estimation and action; for whenever any deviation occurs, it is as important for the medical man to observe and determine its value, as though the engineer detected any such deviation in the burning of his fire, or in the performance of his mechanism."

In the second chapter the author gives a brief summary of the varieties and symptoms of debility, amongst the titles of which he enumerates incapacity for exercise, failure of the faculties of sensation, incapacity for thought, inability to take sufficient sleep, capricious appetite, and, even where sufficient food is taken, a failure in the power of nutrition, as evidenced by wasting of the muscular or adipose tissues, and specific affections of the cornea, teeth, &c. The state of the heart and pulse are also alluded to, as furnishing us with valuable indications to assist our diagnosis. Passing on from these, Mr. Smee

occupies his third chapter with remarks on the causes of debility, and these he reduces to seven heads; but here we think he had better be allowed to speak for himself.

"As manifold are the conditions of vigour and health, so complex are the causes of debility and want of strength; but they may be classed generally under seven great heads. 1. Causes emanating from irregularities of food. 2. Causes emanating from irregularities of the egesta. 3. Causes emanating from diseases. 4. Causes emanating from external influences. 5. Causes emanating from irregularities of rest and sleep. 6. Causes emanating from irregularities of the work performed. 7. Causes emanating from hereditary defect."

His remarks under each of these heads are both judicious and of practical value, but in some few instances appear, in our judgment, to be of too sweeping a nature—for instance, in speaking of the effects of intemperate habits, he expresses himself in the following terms:—

"It cannot be too widely known through the length and breadth of the land, that though, during the last few years, the most severe competition has taken place between different life assurance companies for business, not one has dared to insure intemperate lives, or lives which have been intemperate, at any increased rate. No reasonable rate meets the case. It is in vain that the drunkard returns to propriety, he can never altogether erase the mischief; and although much may be done by great perseverance and skill, he never can altogether bring himself into a healthy state, or be regarded as a thoroughly healthy life. The frame of the drunkard is debilitated throughout, and he sinks by pneumonia, disease of the liver, or other malady depending upon debility, which cuts off his career prematurely. Insurance companies abhor the drunkard, as a risk far too great and uncertain to be estimated and safely considered. If the career of a drunkard be watched, it is astonishing how soon he passes away, as if the voice of nature exclaimed, 'Cut it down! why cumbers it the ground!'"

Now, whilst agreeing with him in his disapproval of excessive indulgence in what are popularly, but most inappropriately, termed "the pleasures of the table," and acknowledging that they are anything but conducive to longevity, we still must question the truth of his assertion that—"It is in vain that the drunkard returns to propriety, he can never altogether erase the mischief . . . . he can never bring himself into a healthy state, or be regarded as a thoroughly healthy life." We have seen too many instances to the contrary, and could point out many excellent examples of the results of the Rev. Mr. Mathew's la-

bours in this respect which would, we feel convinced, carry assurance to Mr. Smee's mind that on this point our views are correct. We have very extensive opportunities of becoming familiar with the habits of the lower orders in this city, and can bear testimony to the fact that many most intemperate characters have reformed, have led, and continue to lead, a most exemplary, sober life; and, what is more germane to the point, that their health is of such a nature as to entitle them to be ranked amongst what, in assurance parlance, is termed "eligible lives." Had Mr. Smee's remarks only referred to that class of patients who have suffered from delirium tremens, or delirium cum tremore, or whatever may be the term to be applied to this disease,—we might have entirely concurred with him, for we are, from sad experience, convinced of the fleeting nature of such apparent reformations; but even in such cases we have seen a few instances that may be considered thorough and permanent reformations, that is, if an experience of some fifteen years' observation of such patients may be looked on as a satisfactory test. And here, perhaps, we may be permitted to state a conclusion to which our experience has irresistibly drawn us,—it is this, that people who confine their excesses to *after-dinner* potations rarely suffer from delirium tremens. We are acquainted with many members of the old school,—a school, happily, passing away from amongst us,—who would not consider the business of the day brought to a satisfactory conclusion did they not go to bed drunk, or, at all events, in a state closely bordering on inebriation, being accustomed for some forty or fifty years of their lives to drink far beyond what is at present tolerated by the usages of society. These parties to whom we now allude never suffered from delirium tremens; *but they never drank before dinner;* up to that meal they were constitutionally abstemious. We recall to mind at this moment a gentleman of this class, who moved in the highest circles, and filled the highest positions in his native county; his family never remember him to have gone to bed sober, yet he never had an attack of delirium tremens, but he never drank anything before dinner. He is now an octogenarian; and some few years back, in consequence of a fall from his gig, he fractured his thigh, from which, however, he recovered with complete bony union, only, however, to resume his former habits, and enjoy a state of robust health, to which many of his very advanced age are complete strangers. The explanation of such an exception from what appears to be the curse attached to excessive indulgence in this vice is, we think,—that people of these habits are enabled to enjoy, at all

events, one, if not two, meals; they make a good dinner, if not a good breakfast, and thus the balance is re-established between the muscular and nervous systems. Be this, however, as it may, the fact stated is the result of no mean experience in such cases,—the explanation offered may be taken "quantum valeat."

Mr. Smee also alludes to the use of opium as being one of the causes of debility, but candidly acknowledges to not having experience of more than one case of the kind. That it is an occasional cause of debility, we can vouch for. A few such cases have come under our notice, and in all of them the symptoms of debility were well marked. In the cases to which we allude, we attributed the debility more to the depraved state of the appetite induced by the use of this drug, than to any other special noxious quality that it possessed—in other words, the debility that was present was more due to insufficient nutrition, resulting from an inadequate supply of food ingested, than to the toxic action of the opium. It has frequently been to us a curious and puzzling question, to what use the enormous quantities of opium imported into these countries is applied, for we are not inclined to believe that, in Ireland at all events, it is indulged in to any great extent; still, the quantities imported far exceed the supply required for legitimate consumption Its effect on longevity also is another problem that has yet to be solved.

The fourth chapter is devoted to the consideration of the consequences of debility; for these we must refer our readers to the work itself, as we are anxious to make a few remarks on that which succeeds it, and we are already extending beyond the limits which we originally assigned to ourselves, though not more than the importance of the subject demands at our hands.

The fifth chapter, however, which is devoted to the treatment of debility, is one that we cannot dispose of so summarily, as it contains most valuable suggestions, and some few remarks to which we shall venture to take exception. After some judicious observations on the imperative necessity that exists for careful nursing, Mr. Smee enters into detail as to the various diets that may be required to conduct our patient to convalescence; and here we must express our opinion that this most essential part of the treatment is but too frequently neglected by practitioners; many of them seem to think it entirely beneath their dignity to notice such, in their minds, trifling subjects, considering their patients' diet as being a question for their friends or the cook; but that such is not the case, we agree with Mr. Smee and every other practitioner who has

gained the confidence of the public,—in many cases, after all, the best and frequently the severest judges of the medical man's qualifications as a practitioner. Amongst the soups recommended we find turtle-soup; and to this we give in our adhesion, if it be made *clear*, free from those abominations too frequently added to give it colour and consistency. We regret that we cannot agree with Mr. Smee's estimate of the value of fish as an article of diet for the invalid; he seems to set a low value on it; whilst we, on the contrary, esteem it highly as a most nutritious and digestible article in the invalid's bill of fare. It is true that he has not the advantage of having at his command our inimitable Dublin Bay haddock; still, the delicate whiting, a *boiled* sole, a few oysters, &c. &c., will be found as valuable as they are agreeable in the treatment of cases where the appetite is admittedly so capricious. His remarks on the various wines are well worthy of perusal; and his observations on the various tonics employed in such cases are sound, and evidently the result of practical experience. With his remarks on the value of the different preparations of iron, we are perfectly prepared to agree—indeed, we have been long assured of the truth of the remark that the hematinic properties of the salts of iron are much better developed in those in which the iron constitutes the electro-positive portion of the salt than in those where it enters into the formation of the electro-negative ingredient.

In considering the physical treatment of debility, Mr. Smee has not overlooked the vast importance of taking a fertile source of defective nutrition into consideration—we allude to mental over-work. There is no more fruitful cause of dyspepsia, debility, and consequent defective nutrition, than the wear and tear of mental exertion; and it is astonishing how difficult we find it at times to induce a patient to accept the treatment essential for his relief; they are willing enough to swallow as many pills, draughts, mixtures, &c., as you may wish to order them; but to give their sadly overwrought brain a holiday, they will not hear of it. We have at this moment vivid in our recollection the case of one of the most leading barristers in this city, to which we are tempted now to refer for the purpose of recording a shrewd observation made by him. He had been suffering severely from debility caused by a great amount of over-work in his profession; and, in reply to our questions, acknowledged that he could not even take rest at night from thinking of the important cases intrusted to his conduct,—at his meals, going down to court, in court, in bed, they were always present to his mind. Amongst other things,

we advised horse-exercise, recommending him to select for the purpose some steady roadster. After a few weeks we saw him again, much improved, and were addressed thus:—"Doctor! your advice was very good in every respect save one—you told me to get a steady roadster: had I done so, I still would have been thinking of my business—no, I got a stumbling brute, and it was impossible that I could think of anything but *keeping him on his legs.*"

There is one passage in Mr. Smee's work that so effectually removes a slur frequently attempted to be cast on our noble profession, that we are tempted to extract it here for the benefit of such of our readers as may not have seen the book,—it is this :—

"Here we may pause to consider an unjust opprobrium which is cast by non-professional persons upon the medical profession, because two men of equal standing treat the same patient, under the same circumstances, by a totally opposite process. Now this apparent paradox never even had the charm, to my mind, of being either strange or singular; for, if regarded as a matter of algebraic formula, such a result is a natural consequence of the complex materials of which the body is formed. To illustrate this proposition, we will assume that the blood is composed of 3 A with 3 B and 3 C in the state of health, and has the power of adding to itself other portions with that relation. If, by disease, this relation is disturbed, and it then is composed of 3 A, 2 B, and 3 C, it follows that the normal relation may be re-established; first, by adding directly B; secondly, by subtracting A C; thirdly, by adding A B C with B in excess; fourthly, by adding A B C, and at the same time eliminating A C; fifthly, by adding A B, and excreting A; sixthly, by adding B C, and at the same time eliminating C. And, besides these multiple plans, we have the infinite combinations of treatment which would arise by introducing other elements, and using the compound plan of adding and eliminating."

We shall conclude our remarks by drawing attention to the appendix to the work, containing many tables of a most useful character, compiled from the most authentic sources; and, in taking our leave of Mr. Smee, we do so with the expression of our sincere opinion that he has discharged the duty he has undertaken in a most able manner, and that he has deserved well, not only of the profession, but of the public, for his masterly and lucid exposition of a troublesome and frequently a most dangerous affection.

An Enquiry into the Origin and Intimate Nature of Malaria. By THOMAS WILSON, ESQ. London: Renshaw. 8vo, pp. 136.

THERE are few subjects of more pressing interest and importance than the origin and intimate nature of malaria, especially if, with Mr. Wilson, we include under that title the causes of epidemic and endemic diseases, contagions, and miasms. The recent disasters that our armies suffered in the Crimea, and the contrast presented by the comparatively healthy state of the troops engaged in the suppression of the late rebellion in the more trying climate of India, add greatly both to the interest and importance of the subject, and along with the recent excitement in reference to the state of the Thames and the measures to be adopted for its purification, cannot fail to insure a ready welcome to any work devoted to its consideration.

It was, then, with anticipations of profit and pleasure that we entered on the perusal of this "Enquiry," but we have been most grievously disappointed, for a more indefinite, inconclusive, and altogether unsatisfactory production we have never met with. Of the special qualifications of the author for entering on such an "enquiry" we know nothing,—the title-page of the book affords no hint on the subject, as, beyond that he is an Esquire, the author gives no further account of himself; but it is not improbable that he means to describe himself when he speaks at page 115 of "the careful, observing, unprejudiced, practical men of the day," whose knowledge is occasionally in advance of that of "scientific chemists, as well as the professors of the conjectural art."

By this latter phrase our unprejudiced and practical Esquire means to designate the medical profession, of whom he loses no opportunity of speaking contemptuously. But, were it not that we consider it a psychological phenomenon, which we should not conceal from our readers, that a work abounding in such passages as the following has been sent to *us* to be reviewed, we should have allowed Mr. Wilson's petty insults to pass unnoticed, for we are satisfied that—

"Purity of motive and nobility of mind should never condescend
To prove its rights, and prate of wrongs, or evidence its worth to others;
And it should be small care to the high and happy conscience
What jealous friends, or envious foes, or common fools may judge.
Should the lion turn and rend every snarling jackal?
Or an eagle be stopt in his career to punish the petulance of sparrows?"

"Man has taken on himself the task of growing on one acre the natural produce of many; to feed twenty men instead of one from off the same extent of soil; to live in crowded cities, drawing their provisions from the surrounding country, producing nothing of themselves; to feed millions where nature intended but a few thousands should exist; he has taken the task on himself, and must carry it through, exposed to destruction at every false step, and at this moment exposed to the accusation by the medical authorities of England of deliberately rendering his farm-house, his homestead, his cottage, his mansion, his palace, a pest-house, the propagator, if not the absolute generator, of all the wide-spread plagues and pestilences, from that which desolated Athens in the time of Thucydides; laid waste the Roman world when Justinian reigned; smote England in the most unhappy and disgraceful period of past history[a]; and now, appearing amidst the tents of an obscure Arab tribe, ignorant of agriculture, living with their flocks and herds on the desert, happily remote from the influences of boards of health, officers of health, and registrars-general, once more threatens Europe; he is accused, in fact, of being the involuntary but certain slaughterer of his little babes. So says the eloquent Registrar-General of England in one of his sanitary reports; he belongs, it is true, and this must not be forgotten, to the theory-loving fraternity[b], a professor, in fact, of that conjectural art which heretofore despised statistics, and which now, by mistaking figures for facts, threatens to convert true science into a scheme of fictions anything but brilliant. To the Chadwicks, the Gavins, and a host of others still more potent, but who always act through the agency of *employées*, we owe the affair of Luton and of Birmingham, of the disgraceful condition of the Thames and of innumerable other localities; the deodorozing schemes of Leicester and Bristol, the intercepting scheme of the Thames, and the network of officers of health, amounting to 2600, now spread over England for the benefit of this tax-loving country."

The theory of the nature and mode of action of malaria, propounded by Mr. Wilson, *Esquire*, is, no doubt, too simple and too much in accordance with recorded facts to find acceptance with the professors of the conjectural art; still, it may be well to bring it under their notice. Be it known, then, that this practical man, whose knowledge is so much in advance of the age, has proved to his own satisfaction that there is a poison floating in the air, supported therein by the gaseous products of fermentation, and more especially by the ammonia now proved to exist everywhere in the atmosphere, the poison being the product of the slow combustion perpetually going on in the air, the earth, the waters, wherever,

[a] "Reign of Charles the Second."
[b] "He is, I believe, a physician and an M. D."

in fact, animal or vegetable organisms are to be decomposed. We call it, he says, putrefaction; it is, in truth, a ferment, and this, increased to the dangerous point by men's imprudence or ignorance, and quickened by epidemic influences, with whose nature we (including even the practical man aforesaid) are, of course, wholly unacquainted, being absorbed by the living tissues, excites that fermentation, that tendency to putrescence in the living blood to whose results medical men have given so many appellations. At times it is called ague, at times remittent fever, now it is small-pox, and now a fatal diphtherite. In ancient primitive times, when physicians were rare, says our author, such cases terminated in a crisis which might be calculated and determined, and which might prove fatal, or at once remove the disease. The fatal event must, however, in those halcyon days, have been rare, for is it not a fact, as is stated in a foot-note with remarkable historical accuracy, that there were no medical men in Rome for the first five centuries of her great career? which explains, as some have fancied, the astonishing number of armies which the republic found no difficulty in sending into the field.

Already have we devoted too much space to this worthless production, yet we cannot close without directing attention to the fact that Holland is the first country in the world, in civilization, philosophy, science, and agriculture; that Paley's Natural Theology is a mere translation of a Dutch work; and that the state of the Thames during last summer was but the result of a series of manœuvres, transparent enough to those who have carefully watched the movements of the last twenty years, as is abundantly shown by the following extract, which occurs as a foot-note:—

"It is right to observe that the unpleasant odour from the Thames, which during the month of June and part of July of the present year so disturbed the olfactory nerves of the Londoners, ceased at once so soon as the Bill for the purification of the Thames passed both Houses of Parliament. What connexion this had with the causes of the odour, and how these odours were so opportunely called forth and so quietly dismissed, I leave to be conjectured by the thoughtful of all classes. At this moment—August, 1858—during the most intense heat, the river is as sweet and fresh as a mountain stream, and has continued so ever since. Some are disposed to ascribe the cessation of the odours (for the stream is not in any way purified) to the throwing of quick-lime into the lower sections of the principal sewers; but if a remedy so simple as this was to be found in such a process, why was it not employed in June and July? It is only the unobserving who are surprised at such

things, and who have not happened to observe what follows the spreading of an ancient cesspool over the fields by the roadside, or pouring its contents into a comparatively small river. The Thames is a comparatively small river, and the effects of pouring into it, at a convenient and suitable time (the dog-days, Parliament sitting, &c.), the contents of half-a-dozen cesspools of fifty years' standing, undiluted and at once, would most assuredly give rise to results such as took place in London in June and July. The plot was a very nasty one—it might easily have been traced and the plotters detected: the sewer-makers, under the direction, no doubt, of the various boards, were very active in various quarters; and, not to mention other places, the main street of Hackney, for instance, for nearly a whole day, was by such means rendered quite unbearable."

Diseases of the Urinary Organs. A Compendium of their Diagnosis, Pathology, and Treatment. By William Wallace Morland, M. D. With Illustrations. Philadelphia: Blanchard & Lea. 1858. 8vo, pp. 579.

The person who undertakes to review a work such as that which is at present before us takes upon himself an arduous task, inasmuch as, being the subject of essays twice honoured with prizes, he not only will have *sub judice* the author of the work in question, but also the judges who awarded to him the prizes, and the competitors from whom he wrested them. In his preface Dr. Morland informs us that the present volume is mainly composed of the substance of two essays to which prizes were awarded by the Boylston Medical Committee, in the years 1855 and 1857, and *in limine* we may anticipate any further remarks that we may feel ourselves called upon to make on his present work by stating our conviction, that the competing essays must have been of a very high order of merit indeed, did they cause any hesitation to arise in the minds of his judges as to whether he was entitled to their award in his favour or not.

Having in this general way given our feeble meed of approval to Dr. Morland's production, we shall venture on a closer analysis of it; and, should we appear occasionally to exercise our office in a more censorious way, we trust that our motive shall not be misunderstood, as it is our opinion that more real kindness is shown in occasional censure than in unvarying, unqualified praise. And first, as to the arrangement he has thought proper to adopt.

Dr. Morland has divided his work into two parts and an appendix—this latter, by the way, like the postscript to a lady's letter, containing some of the most valuable parts of the entire

work. The first part is devoted to the consideration of the diagnosis of the diseases of which he treats, and is subdivided into six chapters. The second part is occupied with a consideration of their pathology and treatment, being also subdivided into six chapters. For our part we must state that we can see no advantage to be gained by thus separating the diagnosis from the pathology and treatment of a disease, but, on the contrary many disadvantages—disadvantages that will materially weigh against its becoming a generally favourite text-book with students. This having to look in one part of the work for the diagnosis, and in another part of the work for the pathology and treatment, entails an amount of inconvenience that will prove distasteful, and will, we fear, impair the circulation of an otherwise valuable work, and not entirely without reason, for the sequence of the observations is broken, and the force of the argument lost, by the present arrangement—an arrangement which, in any future edition of his work, we should be glad to see Dr. Morland alter.

The first chapter of the first part, which our readers will please to remember is devoted to diagnosis, is occupied with what Dr. Morland terms "general considerations,"—these general considerations comprising, first, an enumeration of the urinary organs; second, their anatomical relations; third, the occasional difficulty of diagnosis arising from anomalous positions of the organs. Now, whilst agreeing with Dr. Morland, that though a detailed anatomical description is unnecessary, nay, even uncalled-for in a work of this character, still, that a short account of the positions and relations of the organs is desirable,—we must protest against his anatomical sketch as being entirely too short to fulfil any useful purpose. What amount of useful information could be conveyed in a description of the anatomy, both structural and relative, of such important organs as the kidneys, ureters, bladder, and urethra, contained in about one page and a quarter of rather large-sized type? Or could the most epigrammatic, anatomical author be expected to describe the structural anatomy of the bladder in five lines, and its relative anatomy (on the importance of which he most justly dwells) in five more lines? The remarks on both the male and female urethra are disposed of in nine lines. Eighteen lines are devoted to the structure and relative anatomy of the kidneys and suprarenal capsules; whilst the same subject in relation to the ureters occupies but some ten lines. We are well aware that, estimating the value of literary, as a carpenter would manual labour, by measurement, is but a sorry specimen of the reviewer's ability, and perhaps we should do both ourselves and the

object we have in view better justice by giving an example of Dr. Morland's anatomical descriptions, than by any other means we have at our command. We, therefore, at hap-hazard shall submit for the consideration of our readers his description of the bladder, and allow it to speak for the rest.

"The urinary bladder is ovoidal in shape, membranous in structure, lying behind the ossa pubis and in front of the rectum. It is described as to its body, base, and neck; is held in place by several ligaments, of which the urachus, a fœtal relic, constitutes one. Its coats are three, the external, or serous, the muscular, and the mucous.

"Its *relations* are highly important. To the peritoneum, which invests a portion of it; to the rectum; to the vagina and uterus in the female; to the prostate gland in the male; by continuity its connexion with the urethra, in both sexes, particularly in the male, is never to be lost sight of. The vesiculæ seminales lie against the under-surface of its base."

The deficiencies that exist in this description are too glaring to require a word further of comment at our hands; indeed, it would only be abusing the patience of our readers more particularly to allude to them. One point, however, we have a right to expect, that, no matter how brief the description may be, it should be correct, and even this merit the present description does not possess,—all mention of its superior fundus being omitted, as also of the cellular coats. The reference made to the relation borne to it by the peritoneum is so superficial as to appear almost childish. However, we have said enough, we are satisfied, to convince Dr. Morland of the necessity that exists either for omitting altogether this portion of his work on any future occasion, or to treat of it in such a manner as to do it something like justice. It is true that, introductory to each organ, in the second part of his work, he enters more fully into these topics, but this fact renders the present meagre sketch the less necessary.

In the third section of this same chapter, some very interesting details are given us of the occasional difficulty of diagnosis that may arise from the anomalous position of certain of the organs. This portion of his subject is ably handled, and some most interesting cases selected from various sources are recorded. One of them we shall extract for the benefit of our readers, as it will forcibly impress them with the importance of a correct estimate of the nature of such cases—cases, by the way, not so unfrequent as our author seems to think.

"An instance is related by M. Brochin, in 'The Gazette des Hôpitaux,' Paris, July, 1854, of what is termed by M. Rayer, *luxa-*

tion du rein; others have called it *rein mobile.* This is one of the anomalous positions of the kidney, sometimes congenital, but doubtless often artificially produced, as mentioned above, by tight or ill-applied corsets. In this case, the patient had for a long time experienced pain in the abdomen, of a vague character, and of variable intensity, even momentarily changing, with other disagreeable sensations; and finally, she herself perceived a tumour, on palpation, in the left hypochondrium. Strongly pre-occupied with thinking how much of grave import her condition might imply, she consulted a physician, who rather increased her fears by prescribing strong resolutive means. After a long course of active and often painful treatment (moxas, blisters, &c.), with no good result, she came to the hospital-words of M. Nélaton, who, on attentive examination, recognised in the movable floating tumour (which could be nearly seized by the hand, could be brought forwards, and pushed backwards or upwards under the ribs) *the displaced kidney.*"

The chapter concludes with some forcibly put observations as to the importance of distinguishing between mere *functional* disturbance, arising from *transient* causes, and the commencement of disease. This is a most important consideration, and one that calls for serious attention on the part of the practitioner, especially the junior one. We perfectly agree with the author that, under such circumstances, many occasions may arise for the exercise of a sound discrimination, and that it is here that *tact* proves of such advantage to the medical man. This tact cannot be taught by books; it can only be acquired by experience, and a close examination and an exact appreciation of the relative value of each symptom. The rarer the gift, the more difficult it is of acquirement, the more valuable becomes its possession, and many is the instance in which, in the case of otherwise equally qualified practitioners, does it award the palm of success to one in preference to the other.

In the second chapter we have a striking instance of the progressive nature of our art; it is devoted to the consideration of the affections of the suprarenal capsules, and is one of the shortest in the entire work; in it we find this remarkable passage:—

"To locate during life any affection with positiveness in the renal capsules, would demand an acumen hardly possessed by medical observers in the present state of the science."

This sentence was written previous to the announcement of Dr. Addison's remarkable investigations, and though (as we shall presently see) the subject is done full justice to in a subsequent part of his work, Dr. Morland wisely permitted this chapter to stand as it was originally written. As we have

already stated, it is a remarkable exemplification of the advancing nature of our profession that in the first portion of this work we should read such a statement, whilst in the second we shall find it contradicted by a most undeniable description of the diagnosis, prognosis, pathological appearances, and treatment of these very diseases! We believe that a somewhat similar occurrence took place with reference to transatlantic steam navigation. Such of our readers as desire to read a full exposition of the present state of our knowledge of this hitherto obscure disease should refer to the second chapter of the second part of Dr. Morland's treatise, where they will find full particulars on this most interesting subject. On the present occasion we must content ourselves with the introduction of some extracts from the general *résumé* with which this chapter is concluded.

"Having thus assembled the testimony derived from this interesting series of cases, the following *résumé* of symptoms is subjoined, as tending to throw light upon the pathological conditions. The change of colour of the skin is mainly a diagnostic element; it awakens our suspicions, and thus far, when decided, has been indisputable. This pigmentary change has its places of election, and its peculiar forms. Beginning upon the parts most exposed to sun and friction, in irregular patches it extends, and is more marked in certain localities than in others. The neck, the backs of the hands, the front aspect of the thighs, and the arms, are most frequently affected. Wherever pigment is naturally abundant, the colour is most marked; thus, around the nipple it is deep, while the palms of the hands, and the matrices of the nails, are nearly or quite unaffected. This tendency is regarded as confirmatory of the idea that the change is really a deposit of pigment (Hutchinson). The continuance of the pearly-white of the conjunctiva is differentially diagnostic with a jaundiced condition. . . . .

"M. Brown-Séquard has lately made some important experiments relating to the physiology and pathology of the suprarenal capsules. He finds that when they are removed from a living animal, a remarkable change occurs in the blood, and death soon follows. To any objection that the experiment, by its seriousness, causes death, it may be replied, that much more severe ones are performed upon animals by this distinguished physiologist with conservation of life; and that complete recovery occurs if experiments be not continued upon the same animals. The circulatory change referred to consists in *an accumulation of pigment in the blood*, and in the production of a peculiar form of crystals, not offering the chemical reactions of hematoidine. Dr. Séquard advances the hypothesis that the function of the suprarenal capsules is to prevent the deposition of pigment in the blood. He believes that he has isolated a substance from the blood, which, were these organs absent or inefficient, would be con-

verted into pigment. If very largely furnished, the organs, even if healthy, might not be able to destroy it all. He refers to the fact, revealed by the microscope, that the colouring matter in Addison's cases is identical with that beneath the skin of the African. The blood, too, in the 'bronzed skin' affection, contains pigment-cells, pigment-granules, held in a peculiar substance, and the crystals already referred to. On these grounds M. Séquard thinks the suprarenal bodies may be considered *destroyers of pigment*. The crystals have been sometimes observed by him so large as to obstruct certain of the smaller vessels, even becoming impacted in them. Thus the circulation would be seriously impeded, and that the nervous system would be gravely affected, is another of this observer's deductions.

"There are but few discolorations of the skin arising from disease, with which the true bronzing could be confounded. The brownish hue caused by chronic jaundice is not likely to be mistaken for one which 'strikingly resembles the colour of a bronzed statue from which the gloss has been rubbed off.' Moreover, the *conjunctivæ* and ungual *matrices* would be coloured in the hepatic affection, but clear in the bronzed skin cases; the discoloration in the former would be diffused; one of the chief characteristics of the latter is the *patched* and *mottled* form it assumes. Browning from the sun's rays is ineffectual upon parts protected by the clothing; the spots of *pityriasis versicolor* often have a great similarity to the bronzed skin; 'their limitation to the abdomen and chest, their defined outline, their furfuraceous surface, the slight itching which attends them, their contagious character, and, above all, the microscopic examination of the cuticle,' are sufficiently distinctive.

"The muddy hue caused by certain *cachexiæ* is more equally diffused than the bronzing, and it seldom closely enough assimilates the latter to deceive. Mr. Hutchinson, however, thinks it just possible that in two of the tabulated cases this error may have been committed.

"The excessive *debility* remarked is a very striking symptom. In connexion with the nearly constant freedom from marked emaciation, it has a special value. There is an utter prostration of body and mind, and often death seems imminent from sheer exhaustion, there being no tendency to thoracic disease. This state of things is noticed, with but one or two exceptions, in all the cases recorded. Although never extreme, there has been, in the majority of instances, loss of flesh; but there is a *flabbiness*, rather than an actual wasting. Anemia is nearly always remarked. The pallor of the unbronzed portions of the skin is extreme; the muscles are soft; the conjunctivæ pearly; the blood, examined microscopically in two cases, was found 'loaded with white corpuscles.' To this impoverishment of the blood, the weakness, breathlessness on effort, and feeble action of the heart, are, doubtless, correctly attributed; as also may be the irritability of the stomach. The *pulse* has been characterized by 'extreme softness and compressibility;' no increase

of its frequency is noticed. The *tongue* has not manifested other conditions than such as are usual in any disease where debility is the prominent symptom. Just before death the stomach becomes very irritable; anorexia, nausea, vomiting, pain and sense of sinking at the epigastrium, are spoken of. The state commonly called 'bilious' has been noticed. Costiveness is the rule; few patients have had diarrhœa. The *urine* has not, thus far, been found abnormal in any important degree. Lumbar pain was occasionally noticed; but in two such instances there was coexistent disease of the vertebræ, to which it might very properly be referred; and no reliable deductions can be drawn from its presence in the others. The cerebro-spinal functions were several times disturbed. Epileptiform convulsions in three persons; failure of memory, and remarkable change of temper, in one; and in another, numbness of the fingers, legs, and tip of the tongue, were some of the manifestations. One patient had tic-douloureux. At the Brighton Hospital, a peculiar odour was exhaled from the body in two cases; in one, for some weeks, in the other, for a few days only, before death. This has not been observed in other cases, and cannot be considered distinctive.

"Death has occurred chiefly by exhaustion; sometimes a peculiar collapse has preceded for a while the fatal event, without any assignable cause. Once this phenomenon was so sudden and extreme, that poisoning was suspected."

Returning from this digression to the consideration of the topics contained in the first part of his work, we find Dr. Morland devoting his third chapter to the consideration of the special diseases of the kidneys. In the enumeration of these he follows the arrangement adopted by Dr. George Johnson in his work on Diseases of the Kidneys. Each of these receives just attention at his hands—fatty degeneration of the kidney, however, having evidently been favoured, and from its importance deservedly so, with a marked pre-eminence. Without entering more particularly into the subject, we may content ourselves with stating that this portion of his work provides us with a faithful memoir of the principal points contained in the standard works on these subjects, written in a plain and agreeable style, without, however, advancing anything that can be looked on either as novel or original.

The fifth chapter, devoted to the consideration of the diseases of the bladder, contains much that is both interesting and instructive, collected from various sources, and the classification adopted is a practical one. Much that is interesting is recorded with reference to this part of his subject, and we have a well-executed plate illustrative of rather a curious cause inductive of an irritable condition of the bladder. Amongst the

frequent sources of this condition he enumerates the introduction of foreign bodies into the urethra, whether to relieve irritation or from prurient prompting. In this case a hair-pin was intruded, which worked its way up into the bladder, where it remained for six years, forming the nucleus of a calculus, which was ultimately removed, exhibiting through its centre the bent course of all this mischief. We are acquainted with a somewhat similar case, which did not, however, terminate so fortunately. In the case alluded to, the instrument employed was a tooth-brush, which being too forcibly intruded, became impacted, and subsequently gave rise to intense peritonitis, terminating in death. During life the cause was never suspected, as shame kept the patient's tongue tied, and it was only on a post-mortem examination that the true nature of the case was revealed. The whole of this chapter is well written, exhibiting a praiseworthy, painstaking desire to put on record all the available information in connexion with these subjects. One omission, however, struck us as being singular: we allude to Dr. Morland's not making any reference to the sounding board as a valuable adjunct in exploring for calculi by the sound.

The third chapter of the second part of Dr. Morland's work is occupied with the consideration of the pathology and treatment of diseases of the kidneys; and is one of the most important, if not the most important, chapter in the entire work. He ranges these diseases under the following heads :— Acute desquamative nephritis, chronic desquamative nephritis, waxy degeneration of the kidney, non-desquamative disease of the kidney, fatty degeneration, suppurative nephritis, nephritis from retention of urine, pyelitis, nephritis from renal calculi, tubercular or scrofulous disease of the kidney, cancer of the kidney, and hematuria.

We are unable to follow him through all these subjects; we must, therefore, content ourselves with the expression of our opinion that we have here placed at our disposal a most admirable *résumé* of these most important topics. Every standard author on these subjects has been placed under contribution. Considerable judgment has been displayed in the manner in which their views have been stated ; and the balance between conflicting opinions has been held by the hand of a most impartial, and at the same time a most competent judge. In discussing the *quæstio vexata* of uremia, we have full reference made to Professor Frerichs' opinion on this point—opinions which our readers will remember we have already placed before them in a former Number of this Journal, in the review of "Thudichum on the Urine," published in our Number for No-

vember last. In that article we stated that Scholthin vigorously opposed these views; and it appears that now we have an American author ranging himself under his banner. As this is a subject involving some most interesting points in physiology, we must make room for an extract from this portion of Dr. Morland's work :—

"This theory, however, like almost every new scientific proposition, meets with criticism, counter-experiments, and denial of its truth. In this country, attention has recently been drawn to it by Dr. William A. Hammond, Assistant Surgeon in the U. S. Army, who, in January last, read before the Biological Society of Philadelphia an account of some interesting experiments on dogs, made to test the effects of injecting urea and other substances into the blood. In one series of experiments he removed the kidneys, previous to injecting the substances; in the other, those organs were left intact. Whilst he admits the facts announced by Frerichs, he dissents from his theory. Urea, and vesical mucus, sulphate of soda, nitrate of potash, and carbonate of ammonia, were the substances injected.

"Dr. H. did not detect ammonia in the breath of any of the animals operated on by injection of *urea*. He believes that its presence in Frerichs' cases was 'accidental; that it is not to be regarded as an invariable attendant upon the retention of urea in the system.' The removal of the kidney in the above experiments seemed to have a marked influence upon the action of the introduced substances. Only one out of ten animals died where the organs were untouched, and that one from the effects of nitrate of potash; but all of the second series died after strong convulsions. Dr. Hammond argues that the condition of the animal without kidneys is analogous to that of persons suffering from Bright's disease, and that thus we can judge of the effects of the presence of urea in the system in large quantities in that affection. The *analogy* is confessed, but, as the conclusions under analogical reasonings have always a shade of doubt or fallacy about them, so it is here: there may be some subtle, undetected differences in the action and results of morbus Brightii, which somewhat change the aspect of the matter, and modify the phenomena.

"Dr. Hammond would ascribe 'the condition known as uremic intoxication to the direct action of an excessive accumulation of urea in the system;' and he thinks the fact of its harmlessness in the blood of some persons with Bright's disease is owing to their slighter susceptibility to its action than others.

"The author's *conclusions* from his experiments are:—

"1. That urea—simple, and combined with vesical mucus—carbonate of ammonia, and sulphate of soda, when injected into the bloodvessels of sound animals, do not cause death.

"2. That nitrate of potash, when thus introduced, is speedily fatal.

"3. That death ensues from the injection of any of the fore-

going named substances into the circulation of animals whose kidneys have been previously extirpated.

"4. That in neither case does urea, when introduced directly into the circulation, undergo conversion into carbonate of ammonia.' (See *The North American Medico-Chirurgical Review*, March, 1858)."

The fifth chapter contains an account of the diseases to which the bladder is subject. Cystitis and cystorrhœa come in for a full share of the author's attention, and are fully disposed of. In the treatment of this latter affection favourable mention is made of opium, administered both by the mouth and rectum We must, however, take exception to the quantity in which he employs this drug when administered by the rectum ; our experience being decidedly against so administering *two* to *four* grains of crude opium, or one drachm and a half of laudanum, in the form of an enema, at least without previously making ourselves acquainted with our patient's constitution. We have vividly in our recollection the case of a distinguished practitioner in this city, to whom we exhibited a suppository containing one grain and a half of opium, where very unpleasant symptoms arose in consequence ; and Baron Dupuytren's opinions on this subject, confirmatory of the sentiments we now advance, are too well known to our profession to require reiteration here. Amongst the remedies indicated for the treatment of neuralgia of the bladder, he does not mention the extract of stramonium, a medicine in which we have great faith, and the efficacy of which in allied forms of this disease has been announced by Begbie, Marcet, Elliotson, &c.

His remarks on the treatment of that most troublesome form of disease in children, incontinence of urine, are both sound and practical. He speaks highly of the employment of tincture of cantharides in these affections—an expression of opinion in which he is supported by such eminent authorities as Pereira and Roots. He does not appear to have much confidence in its treatment by belladonna, as suggested some years ago (we believe in 1846) by Morand. We allude more particularly to the *years* that this property of belladonna has been known to us, as within the past year we have seen it gravely announced as a recent discovery! Of its efficacy in this affection we, however, have had repeated and satisfactory experience Not long ago, a fine, healthy, full-grown lad, of fourteen years of age, placed himself under our care for this condition, at one of our public charities. He brought with him a *letter* stating his case, and winding up with the prayer that we should give him some relief, "as it gave him much shame." He was treated with belladonna, and made a speedy recovery.

We regret that we cannot speak in as favourable terms of the section devoted to the consideration of lesions of continuity of the substance of the bladder, as we have been enabled to do of some of the other portions of his work. It had been much better for Dr. Morland to have omitted all mention of the subject than to have treated so important a lesion in the very negligent and slovenly manner that he has done. Not one symptom of this affection is mentioned. The treatment is summed up in these few lines:—"This varies somewhat, according to the circumstances of individual cases. Severe injuries, and such as involve the peritoneum, admit of only palliative measures." Dr. Harrison's most important communication on this subject in the former series of this Journal is indeed quoted; but evidently quoted without ever having been consulted by Dr. Morland. It is even referred to as being in the eleventh instead of the ninth volume. We correct this error, as, previous to resuming this subject, Dr. Morland should consult not only this paper, but also the valuable communications furnished on the same subject by Mr. Cusack, in the Dublin Hospital Reports, vol. ii., and by Mr. Stapleton in the ninth volume of this Journal. We the more regret Dr. Morland's not having perused Dr. Harrison's paper, as it would have induced him to place to the credit of Irish surgery the merit of having originated the *principle* by which the operative interference was guided in the case he alludes to in the practice of Dr. J. Walker.

Again, in the section devoted to retention of urine, we have to deprecate his extreme brevity: he contenting himself with the introduction of a *plate* to indicate the different points at which puncture of the bladder may be effected, and, for the description of the various modes of performing the operation, referring the reader to "Druitt's Vade Mecum and the work of Dr. Gross;" and this in a work in which he considers it necessary to give a full account of the operations of lithotrity and lithotomy. Why these latter should be described at length, and the former disposed of in so summary and cavalier manner, passes our comprehension.

The all-important subject of calculus in the bladder receives a just share of the author's attention. The treatment is properly arranged under two heads:—First, the medical and chemical; second, the surgical; and both of these are ably treated. Lithotrity and lithotomy are both fully discussed; their respective advantages are considered, and the cases suited for one or the other indicated. The various operations are illustrated with very fairly executed woodcuts, as also the several instruments

that are to be employed. In enumerating the various sources from which hemorrhage may arise during the performance of the lateral operation, Dr. Morland does not appear to us to have been sufficiently particular: he contenting himself with merely stating that "any anomalous arrangement of the perineal vessels subjects the patient to the risk of bleeding; and such a deviation from the usual distribution is by no means uncommon." This, we think, is rather a meagre and *jejune* method of disposing of so important a subject. That such anomalies are anything but uncommon, a very slight attendance in our anatomical halls will convince even a superficial examiner. Indeed, an irregular position both of the pudic and of the dorsal artery of the penis is so frequently met with in anatomical investigations, that one is more induced to be astonished at the comparative rarity of accidents of this nature during the performance of the lateral operation, than to be surprised when they do occur. In enumerating the various means at our command for controlling hemorrhage, should it unfortunately arise, Dr. Morland omits to mention the *canule en chemise*. We are the more surprised at this, as he must be acquainted with it; and we have seen it do good service on more occasions than one.

The sixth and last chapter in the book is occupied with the all-important subject of stricture; and he appears to have done it as much justice as could be rendered it in a work in which it could only be allotted a chapter. The causes, symptoms, and various plans of treating this occasionally most unmanageable disease are succinctly laid down, and the observations appended are those of a sound and practical surgeon; but our remarks have already extended so far that we must content ourselves with this general notice, and forego entering into a detailed analysis of this portion of his treatise, which is brought to a termination by an Appendix, in which, as we have already stated, the reader will find much valuable and interesting matter. In this portion of his book Dr. Morland has introduced the important question of the analytical examination of urine; and to this subject he has not done anything at all approaching to justice. It is vain for him or any other writer to hope to be able to communicate to his reader all that he will require to know, even for a very superficial clinical examination of urine, in two pages. Here, as in his anatomical descriptions, it will be more prudent for Dr. Morland either entirely to omit, in any future editions, the subject, or more fully to enter on it. In no other profession is a little knowledge a more dangerous possession than it is found to be in ours;

and nothing tends more to foster this kind of information than these *sketchy* descriptions. What opinion would we entertain of a student who at his examination told us that in the operation of lithotomy "the transverse perineal artery is *sometimes* wounded"? or, in describing the value of the microscope, would venture on the rather flippant statement, that "pus, mucus, blood, fibrinous coats, urate of ammonia, uric acid, oxalate of lime, phosphate of ammonia and magnesia, &c., *may or may not be seen*"? Surely Dr. Morland cannot expect us, at this period of the nineteenth century, and in the present position of chemical science, to accept as a "list of the usual means now necessary for a common urinary analysis," one which is limited to testing the acidity or alkalinity of the urine, to establishing the presence of albumen and urea, and taking its density by means of an urinometer! In the present age of competitive examinations a student would stand but a poor chance of securing one of our public appointments, whose paper, in reply to such a question, would not contain a more explicit account of the steps necessary to be taken in conducting even "a common urinary analysis."

In concluding our notice of Dr. Morland's book, we must express a most sincere wish that he will receive in good part the observations we have found ourselves called upon to make upon the result of his labours. Did we not feel it to be a work of more than average pretensions, we should not have so fully entered on its merits and its demerits. It bears evidence of so much careful labour, of such a painstaking desire to impart the greatest amount of information in the smallest space, that we should be sorry to see its success marred by the few blemishes to which in the present article we have alluded; and nothing would afford us greater pleasure than that Dr. Morland should reap a rich harvest for the labour he has bestowed on the production of a work which bears the impress of great research, sound judgment, and an anxious desire to state facts clearly, and withal modestly.

Lehrhbuch der Histologie des Menschen und der Thiére. Von Dr. Franz Leydig, Professor an der Universät zu Würzburg.

Elements of Human and Animal Histology. By F. Leydig. Frankfort-on-Main; Meidinger & Co., 1857. 8vo, pp. 551.

In most systematic works on human histology or microscopic anatomy, the description of the different organs of the human

body is generally preceded or followed by some reference to the same organs in the rest of the animal series. The comparative anatomy or histology thus given is generally of a very uncertain and unsatisfactory nature, sometimes very brief, and at others so minute as to monopolize unduly the space required for important details of structure of the human frame.

The capricious manner in which comparative histology is handled is such as to render it most difficult to find, except as a matter of chance, complete details respecting any given organ of the animal kingdom. Some important organs, such as those of vision, might, it is true, be cited as exceptions.

Comparative histology has, however, of late been accumulating materials which render it daily more and more important, from its greater practical bearings and points of contact with medicine and natural history.

In the work of Professor Leydig, now before us, we recognise the first serious endeavour to supply the desideratum we have just signalized, by embodying, in a systematic manner, the most important facts of the histology of man and animals lying scattered in so many publications.

Professor Leydig describes his work as an attempt to present a general exposition of the isolated facts obtained by modern observers, himself included, on the histology of the animal kingdom, and, wherever feasible, to reduce these individual facts to more general propositions.

We should have preferred the title of "*Outlines* of Comparative Histology" to that given to the work, as being more appropriate, both as regards the objects proposed by its author and the manner in which he has treated the subject.

The first section consists of a general description of the histology of cells, and their development and metamorphosis into membranes.

The second part comprises the special histology of the various systemic organs, such as the integuments, the muscular, osseous, and nervous systems, the organs of sense and of digestion, &c.

In the treatment of these subjects the description of each organ commences with the account of its structure in man, which is followed by its histology in the vertebratæ and invertebratæ.

Such is our bill of fare, which a close inspection shows us has been methodically followed throughout the work. It contains a rich store of illustrations, amounting to nearly 300 woodcuts, chosen with great judgment, and executed in a superior manner. As regards their originality, this work is a happy exception to most others on microscopic anatomy, where we

are constantly presented with old friends with new faces borrowed from Kölliker or Todd and Bowman.

Taking, for example, the account of the structure of the intervertebral ganglia, we see at once how entirely he has discarded the ideal illustrations which Kölliker gives of them. He has adopted the views of C. Robin, Wagner, and Bidder on the bipolar structure of these ganglia, so easy of demonstration on fishes. The establishment of this fact throughout vertebrate animals, for which Wagner has long contended against Kölliker, is founded not only on minute anatomy, but also on numerous experiments of a physiological nature made by Waller, showing the spinal ganglia to be the centre of a nutritive influence of a bipolar character.

Leydig's figures of these ganglia are interesting, and explain some of the discrepant opinions respecting their structure entertained by previous observers.

We should be glad to see a translation of this useful work, which at present is restricted to the comparatively small class of English readers acquainted with the German language. The illustrations, however, are so interesting and valuable, that even on their account alone we have no hesitation in recommending it to students pursuing comparative anatomy. Those illustrating the organs of hearing, sight, and touch, are such as not to be met with elsewhere.

Principes de Mécanique Animale; ou Étude de la Locomotion chez l'Homme et les Animaux Vértébrés. Par Felix Giraud-Teulon, Docteur en Médecine, &c. Paris: J.-B. Baillière et Fils. 1858. 8vo, pp. 484.

From the most remote times the mechanism of animal movements has been a fertile and suggestive theme of physiological investigation; and it will be admitted that the more deeply the subject is inquired into, and the more widely we extend the field of these inquiries, the more luxuriant will appear the range of new, brilliant, and inviting problems, each in turn claiming our special and attentive consideration, while each also lends some new light to aid in the development of other hitherto obscure and unexplained principles.

The author of the present essay, we learn from the preface, has adopted Borelli's work "De Motu Animalium" as his model, at least in regard to the general arrangement of the subjects treated of, but of course not altogether in the mode of handling them. When we consider the age in which Borelli wrote,

the state of physiology at the time, and the comparatively imperfect degree of development which the exact sciences had attained, we should be disposed to attribute such imperfections as we might find in his work, more to these circumstances than to any incapacity on the part of a writer of such acknowledged sagacity, industry, and truthfulness. Such also was the opinion expressed by our author upon perusing a portion of the treatise in question. "A more profound study, however," he adds, "has in some degree modified this judgment, and the details upon which we shall enter in the course of this essay will account for this apparent change in our opinions. While we entertain the greatest respect for the penetration, judgment, and observation which characterized the mind of the great physiologist, we cannot avoid recognising that with him instinct and *coup d'œil* appeared to take the place of geometric precision. Thus, where we expected at first that his propositions would merely require to be rectified, or reduced to formulæ more in accordance with the scientific language of our day, we regret to have found the necessity of adopting numerous retrenchments and formal contradictions."

The first chapter is occupied with some general preliminary considerations upon muscular action, including voluntary and tonic or involuntary contractility, the latter governing the equilibrium of repose, while the former is employed in maintaining that of motion. Conceiving an erroneous idea of the tonic force, Borelli believed that in order to produce all the effects of which they are capable, the muscles require to be stimulated to action by a certain resistance on the part of their antagonists. He based this opinion upon an erroneous appreciation of a fact which was true in itself, but badly interpreted. A century and a half later, Barthez attributed to the muscular tissue a property not less extraordinary, of which he has treated under the name of *fixed situation* of muscles. This notion appears to have arisen in consequence of his confounding the position of equilibrium in the levers with some new force which he conceived to be a peculiar molecular repulsion arising suddenly in the fibres of a muscle,—a force not less imaginary than useless, and quite inadequate to account for the facts of the case, for if such a force existed, it would obviate the necessity for antagonism of muscles altogether. Having disposed of these and some other curiosities in the history of muscular physiology, the author proceeds to consider what he calls *conscience musculaire*, or that property or quality inherent in the muscles or the nerves by which they are connected to the sensorium, which enables them to convey to that part a conti-

nuous testimony, as it were, of the extent and energy of their action. This sixth sense, or muscular sense, which has been so clearly and beautifully illustrated by Sir Charles Bell in his Bridgewater Treatise, we find here to have been "recognised anew and demonstrated by M. Duchenne de Boulogne," who designates it *muscular consciousness*, and this name has been adopted by the author of the present treatise. Most considerate proceeding, no doubt, if under a new name he would convey a newly discovered idea! but we are disposed to object to these revolutions in nomenclature whenever we find them calculated to dissociate a theory or a discovery from the name of its original proprietor.

The author alludes to a newly discovered force which he conceives will be found to play an important part in the production and maintenance of equilibrium in animal dynamics: namely, a contractile property possessed by the tendons of certain, perhaps of all muscles. The discovery of this property is ascribed to M. J. Guérin; up to the present time, however, its application to the questions under discussion has not been sufficiently demonstrated to enable the author to arrive at any definite conclusions with regard to it; he, therefore, disposes of the subject briefly with a few cautious remarks.

In the second chapter will be found a very elaborate and complete *résumé* of all the mechanical conditions which attend the erect posture of the human framework in a state of rest and equilibrium—not the least important chapter in the book, inasmuch as to this posture necessarily, and to its conditions of repose as a *point de départ*, must all the various phases of locomotion have reference.

In working out the great mechanical problem of equilibrium in the standing posture, the author proceeds by considering the framework as a series of levers, having their fulcra successively each upon the preceding lever, the latter considered as being itself in equilibrio; and in this way the theoretical question becomes one of much simplicity in each of its details. Were we obliged, however, to follow step by step through all the simple articulations till we should arrive at the ultimate point of support, the study of the subject would be tedious enough. The manner in which it has been placed before us in the present treatise is, to arrange the details at first in large groups or subdivisions, thus conducing to a rapid and satisfactory view of the whole. Thus, the body being divided into three portions, and each being supposed to be in equilibrio by itself, that is, in the conditions necessary to stability, the relations of one part to another, or of all three together, are

brought within an easy grasp. But without at the same time including in our examination some of the other classes of the animal kingdom, we could not study fully and properly the mechanism of the human frame, whether at rest or in motion; without this concomitance of research, a number of problems must fail to be satisfactorily solved. This principle appears to be fully recognised in every part of the work before us, and we find that the comparative anatomy of the various parts of the skeleton is constantly referred to, not only in connexion with, and elucidation of, questions in human anatomy, but also occasionally for the purpose of explaining the production of some movements which are peculiar to the different classes of the zoological series. There are several very interesting points in the course of this chapter, to which we would gladly refer in this place, but in order to do so we should be obliged to have recourse to diagrams. There is one subject, however, upon which we cannot avoid dwelling, as it is one whereon anatomists hitherto appear not to have altogether agreed; we allude to the mechanism of the pelvis; it is well known that some descriptive anatomists entertain views in relation thereto which are quite at variance with those advanced by others; while many would seem to have considered the introduction of the subject into a descriptive treatise as unnecessary or unimportant.

In section VI. the equilibrium of the pelvis is considered in two distinct points of view: namely, first, as a mechanical organ of intermediate position between the spinal column and its own supports; and secondly, with regard to the preservation of its annular form, so necessary for its special function in the female. To the first of these we would principally refer in the following details of the author's views.

Considering how important it is that the spinal cord should be well protected against succussion through the bony envelope in which it is enclosed, we are led to inquire into the nature of the structures situated at the base of this column, this being the part through which shocks are usually transmitted under ordinary circumstances.

"Doubtless," says the author, "the intervertebral discs of cartilage appear to stifle in an admirable manner the succussions which may be propagated along this column, but that is not sufficient. It is probable that nature will have accumulated her ingenious resources in order to diminish as much as possible even the first intensity of these shocks. Thus, in case of a fall from a small height upon the feet, we know that all the levers which constitute the lower extremity become flexed,

so as to transmit in a direction other than that of their length the impetus received by the sudden contact of the ground; that this flexion, usually proportioned to the degree of force to be met, imposes upon the extensors of the limb the loss of vital energy consequent on every violent shock; that then, the result of this shock has become much diminished on reaching the upper extremity of the limb."

This leads him to consider the mode in which the force is transmitted then from the thighs to the higher parts of the trunk *in traversing the pelvis.*

"Hitherto," he proceeds, "the mode of union between the sacrum and the iliac bones has been but imperfectly explored; to us at least it has appeared that the true bearings of the case and their advantages have not been sufficiently appreciated. The sacrum, according to all the anatomists, considering its doubly angular form from above downwards and from before backwards, exercises in both ways the function of a wedge between the iliac bones. Its function, in the statics of the vertebral column, depends expressly upon this twice-inclined form."

He then quotes the following passage from Cruveilhier, as the exponent of the general opinion on this subject[a]:—"'The weight of the trunk is transmitted in the axis of the upper half of the sacrum, and consequently in the direction of a line sloping downwards and backwards: from this it follows that the sacrum must have a tendency to be displaced either downwards or backwards; but the former displacement is prevented by the position of the ossa innominata, which are nearer to each other below than above. The backward displacement is obviated by the oblique direction of the articular surfaces of the same bones backwards and inwards, whilst the obliquity of the sacrum itself is in the opposite direction, for it is broader in front than behind.

"Note:—'Without admitting that the influences to which the sacrum is subjected have a tendency to force it backwards as well as downwards, it is impossible to explain either the use of its being shaped like a wedge, with the base turned forwards, or of that powerful apparatus of posterior ligaments which can only resist its dislocation backwards. The idea that these forces tend to press it forwards is manifestly at variance with the nature of the uniting media, for the sacro-iliac symphyses are only maintained in front by a very thin ligamentous layer, and the breadth of the space between the iliac bones is also

[a] Vol. i., p. 513.

greater in front than behind,—circumstances that would evidently facilitate displacement forwards.'"

We do not quite comprehend the latter part of this phrase; for in one sense it seems to imply a contradiction of the author's own proposition. If, in fact, the space which separates the iliac bones is more considerable in front than behind, one would think that the sacrum should be able to escape in front under the influence of certain forces, but that it could not under any circumstances be disengaged posteriorly; an opinion which at the beginning of the phrase appears to M. Cruveilhier to be opposed to the means of union. We pass over this, however, and proceed to the examination of those things which modern works allow to admit of more certainty.

"In their experimental researches upon the situation assumed by the pelvis during the action of standing upright, the brothers Weber have established by accurate measurements several fundamental facts. They have shown, for example, that in the erect posture the upper surface of the first sacral vertebra makes an angle of 38° with the horizontal, or 52° with the vertical plane. Now, if we place a sacrum in this position with relation to two right lines representing the horizontal and vertical, and that we draw on paper, in exact relation with these lines, the outline of the sacro-iliac articulation, we obtain a figure in which," &c. [We must omit so much of this description as relates to the diagram which accompanies it in the original, and endeavour to convey the author's views in modified terms.] Suppose now that the sacrum has to transmit to the iliac bones the action exercised by the weight of the upper parts of the trunk; and further, that this action were endowed with a certain acquired velocity, whence would result a shock to be deadened,—a vertical line represents the direction of this force applied to the centre of the superior surface of the sacrum. Now, if through this line we carry a vertical plane parallel to the direction of the shoulders, this plane would describe, on the two articular facets of the bone, two right lines which would meet *above*, and not *below*, the sacrum. The force directed vertically upon the sacrum would then have the effect, not of impacting this bone between the hard surfaces of the two iliacs, but would exhibit, on the contrary, a tendency to relieve it from impaction; the sacrum, therefore, so far from being a wedge with the apex downwards, is rather a *reversed* wedge, suspended by the interosseous ligaments between the iliac bones.

The pressure which it supports *tends* solely to make it slip, not as a wedge which is being driven, but as one which is being withdrawn. The effort or shock which is to be appeased

is supported altogether, provided it does not exceed certain limits in relation to the extent of the locomotive functions, by the resistance to traction suffered by the enormous interosseous ligaments which are perceived immediately *above* the articular sacro-iliac surfaces. "This manner of appreciating the connexions of the sacrum and the coxal bones becomes very striking when we come to consider the comparative anatomy of this part. In all the mammalia we see the sacrum impacted like a wedge, with its narrow end directed *upwards*. It is only in looking at it on a table, and in a position quite foreign to that which it occupies while endowed with life and motion, that anatomists have been able to see it as a wedge with the base upwards. For it is certain that when we view the inclinations of the articular surfaces in their real and true position with regard to the vertical line, these facets clearly belong to a wedge whose base would be directed downwards. In the sitting posture, matters are somewhat different. In this attitude the function of a wedge may be realized in some measure by the upper half of the articular facet. This, perhaps, may be the reason why a fall on the nates appears to produce so severe a concussion."

The exposition of this mode of viewing the part played by the sacrum, although recognised long since by the present author, is due, he informs us, to Messrs. Hubert and Valérius, of the University of Louvain[a]. As a strong pathological proof in favour of the opinions advanced above, the author cites the following description of an osteomalacic pelvis from the treatise of Messrs. Hubert and Valérius. In this pelvis "the hindermost part of the iliac bones has yielded to the traction of the sacro-iliac ligaments, to such a degree that the internal iliac fossæ present *posteriorly* a deep transverse channel. But the effect is not limited to this: *the articular facets of the coxal bones are bent or folded on themselves in an antero-posterior direction*, and have thus become *too narrow* for the corresponding facets of the sacrum, so that this bone emerges, as it were, and forms a projection into the pelvic cavity.

"Can we look for a more positive proof of the real action of the sacrum on the iliac bones? Is it not clear that if it had acted as a wedge between these softened bones, it would have tended to crush, bruise, and enlarge their articular facets, in place of folding them on themselves?"

The remainder of this section is devoted to the consideration of the pelvis in relation to the maintenance of its annular

[a] See the "Gazette Médicale de Paris," 15th and 22nd November, 1856.

form. Here the author has endeavoured to demonstrate from mechanical reasoning, that the forces which act upon this osseous ring would have a *tendency*, were they not impeded by the assistance of the bony and fibrous tissues of the framework, to increase the transverse diameter of the superior strait, to depress the summit of the upper curve, to straiten the anterior and inferior arc, by pushing inwards the ilio-pectineal region, and drawing downwards and outwards the pubic symphysis. Some of these effects should therefore be presumed or feared to exist, should any cause of diminished resistance or rigidity in any part of the pelvis supervene.

For abundant pathological illustrations of the effects of these forces upon structures weakened and softened by disease, we refer our obstetric readers to the appendix, in which they will find some interesting practical details, which, however, do not admit of our epitomizing without the aid of engravings.

The various mechanisms by means of which the acts of walking, swimming, climbing, and all the other movements of men and animals are produced, form the subject-matter of the remaining chapters of the work; after which is an admirable analytic *résumé* or recapitulation of the whole. This latter constitutes a valuable feature of the volume, affording, as it does, something more than a mere reference to the places where the various subjects may be found.

In a physiological point of view the work of M. Giraud-Teulon abounds with matters of deep interest to the reflecting mind. The author evinces an earnestness and energy which are not less gratifying than is the rigid accuracy which he ever seeks to attain in the development of his propositions. Wherever it is possible, he delights to see these assume the shape of mathematical formulæ, and express concisely and definitely the general principle which has resulted from a careful comparison of numerous and varied facts. In fine, we consider the present volume, of whose general tone our readers will judge from the specimens contained in the foregoing extracts, a valuable addition to our works on physiology.

Die Einflüsse der Vaguslähmung auf die Lungen und die Hautausdünstung. Von G. Valentin, Professor der Anatomie und Physiologie in Bern.

On the Influence of Paralysis of the Vagus Nerve on Pulmonary and Cutaneous Excretions. By Professor Valentin. Illustrated by woodcuts. Frankfort: Meidinger and Son, 1857. London: Williams and Norgate. 8vo, pp 157.

In the comparatively small compass of 157 pages, 8vo, Professor Valentin minutely describes numerous experiments on the vagus nerve, relative to the chemical and mechanical results on respiration attending its section.

The first and greater portion of the work relates to the chemical phenomena of respiration consequent upon section of this nerve; while the concluding part treats of the mechanical changes resulting from this lesion.

On the cover of the work are represented the apparatus and animal as under experiment, the latter apparently in a state of enviable comfort. The apparatus consists of an air-tight case, in which the animal remains for upwards of an hour, after which the air within is carefully analyzed. In order to render the conditions of the various experiments as invariable as possible, the case containing the animal is almost entirely submerged in water of a given temperature, while the pressure of the air contained and its temperature are measured by instruments placed near the animal. On performing each experiment, the lid of the case is rendered perfectly air-tight, by luting most carefully the joints of the lid.

The subject, which in these experiments is always a rabbit, is therefore breathing in a very confined space, the air becoming more and more vitiated by the accumulation of carbonic acid. Most persons would be consequently apt to object *in limine* to the observations, as being entirely inapplicable to respiration in its ordinary conditions; and certainly, in the case of any human being in like conditions, we should be very loath to admit that the changes observed in the chemical composition of the exhaled gases could be considered as applicable to respiration in its normal condition.

Professor Valentin states, it is true that even with 5 per cent. of carbonic acid in this atmosphere, rabbits eat, and appear by their movements to feel quite at home in the apparatus; yet we cannot but think that the experiments would have been more reliable if means had been taken to eliminate the carbonic acid as it was produced.

We believe that some simple arrangement might have been adopted for this purpose similar to that employed by M. Payerne,

in his subaqueous experiments, where the air is constantly purified by passing it through lime-water. The animal might be made to purify its own atmosphere from carbonic acid by some rotary contrivance, like that in a squirrel's cage, and thus remove, or at least diminish, the influence of this toxic agent.

Notwithstanding these objections, we must admit that the results obtained under these conditions by Professor Valentin are almost identical with those of Regnault and Reiset, where the atmosphere surrounding the animal was constantly renewed.

Important results were obtained respecting the relative proportions of oxygen, carbonic acid, and nitrogen, given off by respiration, which were found to be changed immediately after paralysis of the two nerves, and in a less degree after paralysis of even one. Thus, it is well known that a considerable surplus of oxygen is always absorbed into the system above what is exhaled as carbonic acid; but after section of the vagi this surplus is greatly augmented. There is likewise a corresponding augmentation in the quantity of nitrogen over what is normally exhaled.

Hitherto physiologists have been unable to account for the oxygen thus disappearing, although the experiments of Dr. Bence Jones on the combustion of ammonia have certainly thrown great light on the subject. Professor Valentin's experiments will probably afford us the means of still further elucidating this difficult subject.

For those persons engaged in the chemical study of respiration in cases of disease, we may confidently recommend this work of Valentin, which, although presenting at first sight a somewhat formidable appearance from the numerous tables and calculations which it contains, nevertheless, on that very account will be found a most excellent guide in this field of inquiry. It not only indicates the points to which the attention of the practitioner should be directed, but by means of its arithmetical calculations and formulæ the labours of any subsequent inquirer will be considerably facilitated.

We must not omit to notice that Professor Valentin has taken no steps to isolate the cutaneous from the pulmonary excretion, consequently his results represent the combined excretions of the two organs. In France M. Berne, however, has shown that in rabbits the gaseous excretion from the skin may be estimated separately from that of the lungs.

One drawback to the utility of this work is the frequent reference made therein to the author's fourth edition of his Text-book of Physiology (Grundriss der Physiologie), recently published, without which it is almost impossible to follow some of the experiments.

Lectures on Chancre, delivered by M. Ricord, *Surgeon to the Hôpital du Midi, Paris.* Published by M. Fournier, with Notes and Cases; and translated from the French by C. F. Maunder, F.R.C.S., &c. London: Churchill. 1859. 8vo, pp. 244.

Lettsomian Lectures on Syphilis. Delivered before the Medical Society of London in 1858. By Victor de Méric, Esq., &c. London: Churchill. 1858. 8vo, pp. 68.

In the twenty-first and following Numbers of the present series of our Journal we gave an analysis of the views entertained by Ricord on various long-disputed questions in connexion with the venereal disease. These views, it will be remembered, were expressed by him in a series of remarkable letters published at that period, and which have since undoubtedly influenced to a great degree the opinions of the profession on the pathology and treatment of the disease. To them, for example, we are fairly indebted for the final settlement of the dispute as to the identity of the gonorrhœal and syphilitic poisons. The mistakes into which John Hunter was led in his inoculations with the virus of these diseases, and which tended so powerfully to obscure his views, were demonstrated when Ricord happily thought of invoking the speculum to his aid in following out the investigations of his great predecessor. To-day, thanks to this instrument, nobody dreams of confounding the two diseases.

In them, too, he insisted upon the admission of his views on the local character of the venereal disease in its early stage, as a fundamental point of doctrine, the truth of which is now very generally admitted. This discovery of his giving rise, as it has done, to the very general adoption of the abortive method of treatment, has been followed by the happiest results in a therapeutic point of view. There is little room to doubt that it has enabled us frequently to cut short the disease before it has had time to take root in the constitution, whilst it has induced, on the part of those subjecting themselves to infection, a habit of more promptly applying for professional aid; both which circumstances have, we think, powerfully tended to arrest its progress and malignancy.

With happy sagacity he also traced out that succession of constitutional symptoms which, under his designation of primary, secondary, and tertiary, mark the progress of true syphilis—an arrangement which may be said to have received the universal sanction of the profession.

The establishment of these great truths, highly important

though they were, left much to the active genius of Ricord still to accomplish before he could boast of having mastered the problems of the syphilitic disease. Amongst the chief of these was the discovery of the general laws of succession from primary to secondary, by which to explain the varied and apparently contrary facts every day's clinical experience presented to him. This difficulty, which had baffled the great minds of Hunter, Abernethy, and Carmichael, and which Wallace and others vainly sought to reconcile by some pet theory of their own, was no less a stumbling-block in *his* way. Disposed, as his letters tell us, to suspect a plurality of poisons as the only solution of these difficulties, he yet had not been able to find the clue, as it were, to guide him to a positive declaration of his belief. We therefore find at that period, whilst endorsing Hunter's opinion of the unity of the syphilitic virus, he attributed, with him, the varied effects produced by it to differences of constitution, locality, &c.

His active mind did not, however, rest contented, and in the volume before us we find the evidence of five years' additional labour, pursued with his characteristic zeal and ability, resulting in a doctrinal system which, to quote the words of Victor de Méric in his Lettsomian Lectures, now before us, "stands now, in spite of a great many attacks, a handsome edifice, as remarkable for harmony and symmetry as for its practical applications."

It is a striking feature of Ricord, and one in the highest degree creditable to him, that he has succeeded in inflaming with a zeal scarcely less energetic than his own, a corps of most able men, to aid him in working out his views of this disease;—with just pride he styles them his pupils, and frequently refers to their labours, as to those of his "school of the Midi." Indeed, it would not be easy to determine how much of his deservedly acquired fame as the greatest of living syphilists has been derived from the reflected light of Melchior Robert, of Bassereau, Clerc, Fournier, and others, and, let us add, of his British pupils, of whom Acton and Victor de Méric may be named as amongst the most distinguished.

The volume of M. Fournier, an excellent translation of which is presented to us by Mr. Maunder, treats only of chancre; it purports to be a transcript of a course of Lectures delivered by Ricord in the year 1856.

To describe the book, however, as a simple transcript, would be to do great injustice to M. Fournier, who exhibits in his elaborate notes and series of cases appended to it, evidence of a most active and unwearied industry, and very consider-

able ability in following out in them the ideas of his master to a complete and logical demonstration. And here we may add, by way of parenthesis, that the resources possessed by the distinguished Professor and his school in pursuing their investigations of this disease, arising out of the complete surveillance exercised in Paris over prostitution in all its details, places them in a position of advantage no practitioner in Dublin, or, indeed, in any part of Great Britain, could hope by possibility to attain.

The conclusions to which Ricord has been led by these later researches are undoubtedly startling, chiefly in the fact that they have induced him to ignore as *syphilitic* seven-eighths of those chancres the profession have been blindly regarding as such from time immemorial;—and yet, if we are to credit M. Bassereau, to whom it seems is due the honour, if such it be, of having first clearly defined the new doctrines, the profession were not always so blind. Here is his statement:—

"When we read all that ancient and modern authors have written on the diseases of the organs of generation, we find that gonorrhœa, chancre, buboes, and vegetations, are mentioned up to the last years of the fifteenth century, as maladies requiring only local treatment: consecutive affections had never up till that time been heard of. The end of the fifteenth century is marked by the appearance of a NEW DISEASE, according to all the contemporary authors. This malady commences by ulcers, which are rapidly followed by pustular eruptions over the whole body, and frightful pains in the head and in the extremities. Those who were eye-witnesses of the appearance of the new disease do not confound the callous ulcerations by which it commences with the ulcers of the organs of generation known for ages. Thus these two species of contagious ulcers occupy in their writings separate chapters, and even books. But twenty or thirty years after the apparition of syphilis in Europe, a great number of physicians not knowing, as those who had witnessed the first ravages, how to distinguish the affections by which the new disease commenced from those which had no relation whatever with it, assumed by degrees the habit of submitting to mercurial treatment, without distinction, all patients affected with blennorrhœa, chancres, and bubo; for it had already passed into general practice to administer mercury, not only as a modificator of existing syphilitic symptoms, but as a prophylactic agent against affections to come from the moment the first signs of contagion commenced to appear. The confusion which reigned in practice was soon introduced into the works of the day."

Ricord would appear to have completely given in his adhesion to these views of his pupil. Accordingly, we find his

first twelve Lectures devoted to elaborately explaining the characters of the two distinct forms of primary ulcer he proposes to admit, and which he has named, from their leading character, "chancre mou," and "chancre induré." In his thirteenth Lecture he thus sums up his opinions with regard to them:—

"Allow me, now that I have separately delineated the characters peculiar to each chancre, to draw a parallel between them.

"1. The simple, non-infecting chancre allows the tissues in which it develops itself to retain their normal suppleness. It is a chancre with a *soft base.* The inflammatory complications that it may excite sometimes give to its base a certain degree of hardness; but you know that this hardness presents characters totally distinct from the induration peculiar to the other variety of chancre.

"2. It is generally *multiple,* either *at once,* or by a series of inoculations consecutive to the first contagion.

"3. Its pus possesses in the highest degree the characters peculiar to contagion; it is an inoculable pus, *par excellence.* Observe, that this specificity of the secretion, furnished by the ulcerated surfaces, persists almost during the entire existence of the chancre.

"4. It is a chancre possessing an *invading and destructive tendency.* It is the variety most likely to undergo the phagedenic deviation.

"We have here four well-defined characters: let us now compare them with those of the infecting chancre:—

"1. Its base is indurated; and indurated in a special manner—pathognomonic.

"2. It is generally a solitary chancre; rarely multiple.

"3. Its pus rapidly loses all virulent specificity; at all events, for the infected subject, who, within a few days, becomes refractory to inoculation with his own virus.

"4. The infecting chancre does not present any great tendency to extend itself; it soon limits itself, and spontaneously arrives at cicatrization. It rarely assumes the phagedenic form.

"So much, gentlemen, for the symptomatology. But this comparison would be incomplete, if we neglected to add the following considerations:—The simple chancre is very common; the infecting chancre is comparatively rare. The simple chancre seems excluded from one part of the body—the cephalic region; the infecting chancre is produced everywhere. The one is, PERHAPS, transmissible to animals; the other affects but man, and all kinds of animals are constantly refractory to its virus. Finally, and this is the principal point—the first may be produced repeatedly on the same individual; whereas, the second can only be developed *once in its form.*

"Finally, the investigations on contagion establish between these two varieties of chancre differences far more considerable, perhaps, than the symptomological considerations previously developed. But it is, especially, the question of prognosis which makes of the two chancres completely independent nosological species; I might

almost say, opposed. The simple chancre is a local lesion, without influence on the economy: it is a *chancre without syphilis*. The indurated chancre creates a diathesis, engenders a general state, a morbid temperament: it is the initial expression of a constitutional affection: it is the *exordium of syphilis*."

That these statements are in the highest degree deserving the attention of the profession, will be readily admitted. If their truth be established, they reduce genuine syphilis in its primary development to the comparatively narrow limits embraced within the Hunterian chancre; all those other forms of sore hitherto included in the same category with it, although liable to be followed by suppurating bubo, and to take on phagedenic action, are, in effect, to be no more considered syphilitic than would be a simple wound of the lower extremity attended with a sympathetic bubo of the groin.

The proofs afforded us in M. Fournier's volume of the truth of these doctrines are derived chiefly from inoculations made with the utmost care in many hundreds of cases—patients in the Midi. Some instances in addition are brought forward of inoculation of healthy individuals—"virgin subjects"—in the phraseology of Ricord. Of these the case of M. Lindman is the most singular. This gentleman, apparently a member of the profession, through a pure feeling, as we are informed, of doctrinal enthusiasm, has inoculated himself over two thousand five hundred times with the matter of the simple non-infecting chancre of Ricord, with the double result of, firstly, in each case producing at the seat of inoculation a well-defined chancre; and, secondly, of never having had secondary symptoms.

But, unquestionably, the strongest collection of facts in support of the new views is furnished by M. Fournier himself in those series of cases in which, with admirable perseverance, he traced back the histories of infected patients admitted to the Midi, sought out the frail fair ones to whom the unfortunates ascribed their misery, and, with speculum in hand, discovered unerring evidence of their complicity, and of the correctness of Ricord's pathology. One of those well-traced histories details how a father and his two sons became similarly infected by a servant-maid, with whom all three were cohabiting at the same time!

We should err, it appears, were we to imagine that all would be plain sailing with us, once we had given in our adhesion to the new views. Ricord warns us against numerous sources of fallacy, by which the inexperienced practitioner would be led astray. Thus, induration being laid down by him

as the touchstone of true syphilis, it becomes a vital point to determine what is and what is not induration. This is not by any means an easy matter. He describes two very different forms of it, either of which, he tells us, is equally symptomatic of infection. One is that well-known form with which we are all familiar as characteristic of the Hunterian chancre; the other variety, however, to which he has given the title of "Parcheminée," because of its resemblance to a piece of parchment beneath the fingers, is frequently so indistinct that we are told we must know by practice *how* to look and *where* to look for it, knowing which we shall never fail to find it. This may be quite true, but we imagine it will often be no easy matter to acquire the necessary *education.*

Again, in determining upon the nature of a primary sore, we should always bear in mind that the non-infecting chancre is liable to become, as it were, pseudo-indurated in consequence of the application to it of caustics or other irritants. Ricord states that there ought to be no difficulty in distinguishing between this and the genuine induration, to which latter he affixes diagnostic characters which always enable him readily to discover it.

Another singular source of error arises from the fact that a patient already affected with constitutional syphilis will not reproduce an indurated chancre. If subsequently inoculated, either naturally or artificially, with the syphilitic virus, such subjects will invariably generate a chancre with a soft base, which, although "*non induré,*" will yet be capable of imparting an indurated chancre to a "virgin subject."

We shall but instance one other source of fallacy: namely, that arising out of the possibility of a double infection, which might be prolific in errors of diagnosis and treatment. The case, with the recital of which we shall close our notice of M. Fournier's interesting volume, is singular as illustrating at once the abundant room for mistakes such a case would present, and in a striking degree the discriminating tact of Ricord.

"N. Alphore, aged 17, contracts a chancre towards the end of September. He presents himself at the consultation at the Midi, where the following state is established on the 3rd of October:—Indurated chancre on the corona; cartilaginous induration; multiple bi-inguinal adenopathy, hard and indolent. Dressing with aromatic wine; mercurial treatment. The 7th, same state. The 14th, improved state of the chancre (period of reparation commencing). 24th, the state of the patient is greatly changed. The chancre on the corona has become broad and hollow; its base is still greatly indurated. Moreover, there exists on the integuments covering

the penis a large chancre with an œdematous base, but without true induration; several small chancres, with a soft base, on the cutaneous surface of the foreskin. The patient affirms in the most formal manner that he has had no connexion with any woman since the time he contracted his first chancre. Are we, therefore, to attribute the new chancres to an accidental inoculation, to a contagion of vicinity? N. enters the Hospital on the 24th. In the first days of November appearance of acute adenitis of the left groin, presenting all the characters of the bubo peculiar to simple chancre,—suppuration; positive inoculation of the glandular pus. In the right groin, persistence of the adenopathy peculiar to the infecting chancre; glands multiple and indolent. In December, secondary affections; roseola, &c. Notwithstanding the denials of the patient, M. Ricord did not hesitate in ascribing the origin of the second chancres to a second contagion, resulting from a recent coitus. And, truly, a few days after he had entered the Hospital, N. informed me very confidentially that on the 15th of October he had had connexion with a woman named P——, whose address he gave me. 'On the following morning,' added the patient, 'the chancre on the corona had already commenced to extend itself; and two days afterwards the other chancres made their appearance.' I immediately went to the woman P——, and detected on her the existence of three large chancres, with soft bases, situated on the internal surface of the left labium, on the fourchette, and upon the folds at the entrance of the vagina. This woman had also infected another man, who was likewise the subject of soft chancres, with an acute bubo, and complicated with acute adenitis of the left groin."

The three very able, though unpretending, Lectures of Victor de Méric, which also lie upon our table, should have claimed an earlier notice in this article, did we not feel that in devoting our space to a statement of those new views of Ricord, we were adopting the readiest method of directing attention to those of his able commentator. Our author devotes his first Lecture to an elaborate examination and eulogy of these new views of the French school, and we cannot too strongly recommend it to those anxious to make themselves familiar with them. His second and third Lectures are devoted respectively to the constitutional and hereditary consequences of the disease. He essays, in the first of the two, to accomplish a feat which all practical men would hail as a great boon. This is nothing less than an attempt to simplify the classification of the secondary eruptive affections. Founding his idea upon the well-known liability of some of these to run into ulceration, whilst others have no such tendency, he adds:—

"We can, therefore, with some propriety use as a guide for diagnosis and treatment the following table:—

First Division.

Non-ulcerative, or deciduous.	Erythema and papules.

Second Division.

Ulcerative, or secreting.	Vesicles, pustules, and tubercles.

"I must confess my partiality for the practical lucidity which is afforded by the division into ulcerative and non-ulcerative eruptions, because ulceration denotes a considerable activity in the poison, and a want of resistance in the patient; hence, when we see the possibility of the formation of ulcers by the appearance of vesicles, pustules, or tubercles, we have made a discovery which is of paramount importance in the treatment. We are then bound to assail the poison with some energy, and to husband the strength of the patient. I may, perhaps, add that the manner in which syphilitic ulcers are mentioned is, in general, very unsatisfactory, for sufficient attention is not paid to the manner in which the ulcer has arisen."

The great practical value of this classification, as an aid to the correct therapeutical management of secondary eruptions, must be so manifest to our readers as to require no commendation from us; and of its correctness as an indication for treatment, our own experience forbids us to doubt. Indeed, we cannot too highly praise these practical Lectures on a subject for the knowledge of which M. de Méric, whom we are proud to claim as a former pupil of the Dublin school, is second to no surgeon in the great metropolis.

On Dropsy connected with Disease of the Kidneys (*Morbus Brightii*), *and on some other Diseases of those Organs associated with Albuminous and Purulent Urine.* Illustrated by numerous Drawings from the Microscope. By W. R. Basham, M. D., F. R. C. P., Physician to the Westminster Hospital. London: Churchill. 1858. 8vo, pp. 241.

Our knowledge of diseases of the kidneys is comparatively of recent growth, dating almost from the discovery of albumen in the urine at the close of the last century (1794), and from the clinical researches of Dr. Bright, published in 1827, by which this albuminous urine was connected with certain morbid appearances presented by these organs. But, though of recent growth, it has attained a degree of accuracy and precision, with regard to pathology, diagnosis, and treatment, surpassing that we possess of almost any other internal organs. Two circum-

stances have contributed to this, first, that there is, perhaps, no important organ in the body whose minute structure has been so completely and clearly demonstrated as that of the kidney has been by Mr. Bowman; and secondly, the morbid deposits or accumulations to which the kidney is liable occur, almost without an exception, in such a situation, within the uriniferous tubes, that portions of these materials are being continually washed out by the stream of liquid which is poured into the extremities of the tubes, and so they come within the sphere of our daily observation; thus affording the pathologist and the practitioner an opportunity of ascertaining the nature and tracing the progress of disease, which is not presented in the case of any other internal organ.

The contemplation of these circumstances it was that enabled Dr. George Johnson to predict the attainment of that accuracy that his own subsequent writings, in so eminent a degree, served to establish. He, as is now well known to all the members of the profession, recognised by careful microscopic examination several varieties in the sediments occurring in albuminous urine, and by connecting these with the general symptoms and the appearances found after death, discovered diagnostic marks between what he believed to be different forms of disease of the kidneys, characterized by the presence of albumen in their secretion.

The views of Dr. Johnson have been very generally adopted by subsequent writers, and the terms proposed by him, viz., acute and chronic desquamative nephritis, acute and chronic non-desquamative disease, and fatty degeneration, are in very general use.

The researches of Dr. Basham, of which he gives an account in the volume before us, are carried out in the same manner as those of Dr. Johnson, whose results they in a great measure confirm, the chief difference being, that Dr. Basham has been led to regard the several conditions described by Dr. Johnson as distinct forms of disease, as being merely the progressive stages of one disease, morbus Brightii; the difference is, however, not essential, as both inquirers recognise the curability of some of the conditions they describe, and agree in the main as to the treatment by which that degeneration of tissue, which, when once established, is admitted to be incurable, may be best prevented; and they equally acknowledge, that these conditions may run into one another; while the researches of Dr. Basham show very clearly the gradual stages by which this takes place, and will afford practitioners the means of forming both a diagnosis and a prognosis with increased confidence and satisfaction.

It is from the mode in which these investigations were carried on, that this arises. Regarding the microscope as holding the same relation to the diseases of the kidney that the stethoscope does to those of the chest, Dr. Basham examined with it, from time to time, the sediments occurring in the urine in all the cases of renal disease coming before him, as Physician to the Westminster Hospital, and inserted drawings of them along with the daily notes in the case-book. Of these drawings he has given well-executed copies, thus rendering his work one of great value to all who are engaged in treating cases of this description.

That this mode of investigation by microscopic observation at the bedside is the best for furthering our knowledge of this class of diseases, does not, happily, require to be enforced by any argument of ours; for though there are those who, from indolence, or even more unworthy motives, still sneer at "microscopes, and cells, and things of that sort," even as, when they were themselves young men, they had to encounter the jokes of those who laughed at their stethoscopes, tubes, and wooden trumpets,—the benefits derived from the use of the microscope are now too well known to require any advocacy; but if any argument were required, we should have no hesitation in referring to the present state of renal pathology as establishing its claims beyond controversy. Valuable, however, as is the information afforded by this instrument, it is only, as is very truly observed by Dr. Basham, by comparing the results obtained by its aid with the general symptoms, just as in the corresponding case of the stethoscope, that reliance can be placed on its indications. But while we thus fully recognise the great importance of microscopic observations, we cannot concur in the low estimate formed by Dr. Basham of the value to be attached to a knowledge of the specific gravity of the urine and the amount of albumen contained in it. It is true that its hourly and diurnal variations in these respects render the results of single examinations of little value; but, with proper precautions against these sources of error, we believe the information to be thus obtained is only second in importance to that afforded by the microscope.

The inferences to be drawn from the appearances revealed by the microscope are daily becoming more certain, as we acquire a more extended series of facts for their basis. The examinations that have been made, as to the alterations effected by disease in the fluids excreted from the lungs, have contributed much to the advancement of our knowledge in this respect, more especially as the diseases of these organs have been so thoroughly investigated by other means as to enable us to

check the results obtained by the microscope. We were then glad to find the following sketch of these observations in the preface to Dr. Basham's work:—

"Mucous membranes exhibit remarkable peculiarities in reference to these modifications or alterations of the epithelial cells, when thrown off under the influence of various morbid or disturbing causes; but our knowledge of these modifications of development has not hitherto been applied, beyond certain limits, to the elucidation of the nature or progress of disease. In affections of the air-passages, a pituitary, a mucous, a purulent, or a blood-stained excretion are, severally, evidence of disease, differing in intensity and kind. If the excretion from the mucous membrane in simple catarrh, in bronchitis, or in pneumonia, be microscopically examined, various modifications of cell-structure will be apparent, which are distinctly characteristic of these diseases. In catarrh the healthy epithelial cell is shed in abundance, but accompanied by other cells, which appear to be atrophic, or abortive cells of the same class. They are usually more granular than the standard epithelial cell, and, in place of a single nucleus, several distinct nuclei appear collected together within the cell-wall.

"These have been variously named by different observers. It is the cytoid corpuscle of Henle, and bears a close resemblance to the lymph or colourless blood-corpuscle, except that it is much larger when occurring in catarrhal excretion. Associated with these in the severer forms of catarrh, in those approaching to the limits of inflammatory action, may be seen the compound inflammation-corpuscle of Gluge. This is a large ovoid or spherical cell, containing numerous resplendent nuclear granules. When the cell-wall is ruptured or dissolved, these nuclear granules remain clustered together in a grape-like mass; hence they are called botryoidal, or, by some writers, mulberry, bodies. The mucus or fluid accompanying catarrhal exudation also exhibits many isolated resplendent granules, which are considered as free nuclei. These microscopic objects occur in a clear, viscid fluid—called mucus or mucosin—which appears for the most part to be derived from the rupture or breaking up of the cells whose nuclei are distributed through it. In bronchitis the excretion from the mucous surface is the product of a more energetic disturbing cause. The epithelial cell has altogether disappeared. The field of the microscope presents numerous cells, spherical in shape—uniform in appearance and size—smaller in diameter than the epithelial cell—somewhat granular on the surface of the cell-wall—and displaying within a trefoiled or reniform nucleus; these are the exudation-or pus-corpuscles. The fluid which accompanies them is less viscid and tenacious than the catarrhal fluid, and has, moreover, a faint alkaline reaction. The more purulent the secretion, the less viscous is the accompanying fluid, and practically it is well known that in severe bronchitis, as the attack subsides, the sputa become more viscid, and ultimately return to conditions not unlike

those observed in simple catarrh. In the early stage of pneumonia, the excreta consist of epithelium in small quantity, mixed with exudation and compound inflammation-corpuscles in hourly increasing proportions, the whole mixed with a fine granular material, stained more or less with hematin, and with which not unfrequently a few isolated blood-corpuscles are mixed: this is the true croupous exudation. As the disease advances, these characters are lost, and these cells give place to an abundant formation of pus-corpuscles; and the sputum then acquires many of the qualities characteristic of bronchitis. From these data we are justified in concluding that the respiratory mucous surface, under the influence of disease, gives off products differing according to the nature, intensity, or duration of the disturbing cause. We have less need for the aid which these facts offer, and are less dependent on microscopic examination in diseases of the respiratory organs and passages, because the successful manner in which the stethoscope has been applied to the investigation of the morbid phenomena of this region, leaves a minute acquaintance with the microscopic character of the excreta unnecessary. But from other mucous surfaces similar products are cast off according to the nature and intensity of the disease. The present work is an effort to apply these facts to the investigation of diseases of the kidney; and to ascertain if the products thrown off from the tubuli uriniferi during the progress of disease possess any similar specific characters, from which correct deductions might be drawn as to the nature, degree, duration, or stage of the renal disorder."

The principles by which he has been guided in his researches being thus explained, Dr. Basham proceeds to enumerate, as follows, the objects that are met with, from time to time, in albuminous urine, and then explains their mode of production, and their relation to the diseased action:—

"Fibrinous casts, containing blood-discs (blood-casts).

"Granular casts, containing epithelial cells and blood-discs.

"Finely granular casts, containing epithelial cells, either natural or undergoing transformation.

"Finely granular casts, containing compound granule-cells and free nuclei, and occasionally pus-cells.

"Pus-casts,—casts composed exclusively of pus-cells are very rare.

"Hyaline casts, containing epithelial cells, either natural or in a state of change.

"Hyaline casts, containing resplendent granules, free nuclei, and here and there an epithelial cell.

"Hyaline casts, containing compound granule-cells, free nuclei, and disintegrated cells.

"Hyaline casts, containing large fat-granules, and grape-like clusters of nuclei, having an oily appearance.

"Hyaline casts, without admixture or structure of any kind.

"Epithelial cells, isolated or in groups, from the uriniferous tubes, the pelvis of the kidney, ureters, bladder, urethra, or vagina.

"Amorphous flakes of a granular material, stained of an orange-red by the hematin, sometimes entangling blood-discs, more frequently without.

"Blood-corpuscles, always single, never in rouleaux.

"Pus-cells, isolated or massed together in groups.

"Compound granule-cells, isolated resplendent granules (free nuclei).

"Botryoidal clusters of granules, or nuclei (disintegrated compound cells), and diffuse granular matter.

"Crystals of uric acid, rhomboidal or lozenge-shaped, occasionally columnar, sometimes amorphous (grit).

"Crystals of oxalate of lime (octohedra).

"Crystals of the triple phosphate.

"Vibriones.

"Spermatozoa."

The epithelial cells, accompanying or forming part of many of these various deposits, may have been derived from any of the various parts of the urinary organs, and present the characters peculiar to each. The greater part, as well as the more important, are, however, derived from the cortical portion of the kidney, and the appearances presented by them vary with the state of the organ. Some may have the normal characters, but generally they are more or less transformed. The first departure from the healthy type is its becoming more granular, the single nucleus being either obscured, or accompanied by other nucleus granules. This granular condition Dr. Basham regards as the result of a hyperemic or inflammatory condition of the mucous membranes:—

"Some observers are disposed to consider that these granule-cells arise from the fatty degeneration of pus-cells; but a careful examination of the mucous fluid in the mildest forms of catarrh, where no pus-cells have pre-existed, will, I think, prove that one of the earliest manifestations of a hyperemic condition of a mucous surface, accompanied by a casting off of epithelial cells, is the metamorphosis of some cells and their departure from the normal type, and their tendency to become abortive, or what appears to constitute a fatty degeneration. . . . . .

"The pathological import of these granule-cells has, by different observers, been variously estimated. By some they have been considered the product of an inflammatory process, and Gluge has designated them as compound inflammation cells. I do not express any more decided opinion on this point than that, so far as the renal structures are involved, their presence is usually preceded by a state of inflammatory congestion, and that proportioned to their number,

and the nuclear or fatty metamorphosis of the epithelial cells, does the degenerative process advance in the kidneys; so that an examination of the sediment in albuminous urine at certain intervals will exhibit this transformation, either advancing or receding, and an estimate may accordingly be made with some degree of certainty of the state of the kidney during life."

As the disease advances, the cell walls may give way, and numerous highly resplendent granules, isolated and scattered through the casts, are constantly met with; but these are of little importance compared with groups or grape-like clusters of granules, hence called botryoidal, but which occasionally assume a crescentic shape. These are groups of nuclei without any cell wall, derived from cells which had undergone a higher degree of transformation.

"The pathological import of these clusters of nuclei without any visible cell-membrane has, I believe, in relation to the kidney, never been satisfactorily made out. It has appeared to me, as I shall endeavour to prove in the sequel, that these several forms of granule-cell, compound fat-cell, molecular fat-cell, fat aggregate globules, or by whatever other name they may be described, represented a deteriorated or atrophic state of cell-development, which eventually becomes so powerless that the cell-membrane disappears, nothing remaining but a heap of nuclear molecules, which, accumulating in the tubes and Malpighian bodies of the kidney, eventually constitutes a true fatty degeneration of the kidney. These grape-like and crescentic clusters of granules in the urine are significant of a subacute process, and imply an atrophic or degraded state of cell-growth, and when they become daily more numerous are very unfavourable indications.

"The large compound granule-cells, possessing the characteristics of Gluge's compound imflammation globule, so far as the urinary sediment exhibits them, I believe, never make their appearance but as the sequel to a state of hyperemia. These cells represent a stage succeeding to one of inflammatory engorgement, and may at all times be considered as indicative of a low, chronic, or subacute state of inflammation. They are always numerous in acute morbus Brightii, or that form of renal disease which produces the large pale-white kidney. But they also are, in the acute form of the disease, almost always associated with cells which present a distinctly granular appearance, and within which no nucleus, but only a diffuse fine molecular, or finely granular material, is contained. On rupture of the cell-wall the finally granular contents are diffused over the field.

"It has appeared to me that the finely granular material mixed with free nuclei which appears to constitute the contents of the tubes, and even of the Malpighian bodies in the large white anemic kidney of acute morbus Brightii, is derived partly from the disintegration of these granular cells, and partly from a diffuse inflam-

matory exudation, which in these large kidneys is interstitial as well as intratubular. For these reasons, I am reluctantly led to doubt the appropriateness of the term desquamative, or non-desquamative, as applied to some forms of morbus Brightii by Dr. G. Johnson. I have arrived at this opinion by devoting much attention to the microscopic character of the sediment in many cases of renal dropsy, making drawings, almost daily, of the casts and cells, and watching and recording whatever changes might present themselves, whether in favourable or unfavourable cases; and in the latter, whenever possible, comparing the cell-structure and contents of the tube with the cells and casts present in the urine during life."

This shedding of epithelium Dr. Basham regards as constant in Bright's disease, and in those cases described by Dr. Johnson as non-desquamative he thinks the stage of desquamation had passed before they came under notice; and, therefore, he objects to the term non-desquamative nephritis.

On another point of more importance Dr. Basham expresses the following very decided opinion; but we must say that our own experience inclines us rather to agree with those who believe that hyperemia is not a *necessary* element in the morbid process:—

"A careful attention to the earliest symptoms of the several forms of morbus Brightii will establish the fact that every case has its origin in a period, if not of inflammatory congestion, at least of hyperemia, or passive congestion, or stasis.

"It is this state of hyperemia which first embarrasses the renal function; some of the constituents of the blood either transude, or direct rupture of the Malpighian capillaries takes place, and blood-corpuscles appear in the urine, not always, however, proportionately to the amount of inflammatory engorgement. In some cases the presence of blood can only be detected by the microscope; in others it is palpable to the unaided eye. This hyperemic stage is followed by a greater or less exudation of epithelial cells, and with modifications of cell-structure, varying with the intensity of the disturbing cause. In curable and tractable cases the amount of epithelial exudation is trifling, and only lasts for a short period. In some varieties of the disease but little epithelium is thrown off, and what appears in the urine consists of abortive or compound cells, clusters of nuclei, and hyaline casts. In other forms, the epithelial exudation continues for a longer period, and is apparent in some modified form almost to the last hour of life."

In the third chapter Dr. Basham discusses the nature and origin of the tube casts. The *fibrinous casts* containing blood discs he regards, with Dr. Johnson, as the result of hemorrhage from the Malpighian capillaries, and the blood becoming coagulated in the tubes; but, as to the *granular casts* containing epi-

thelial cells and blood discs, he dissents from those who regard them as coagulated fibrine, and agrees with those Continental writers who regard them as true croupous exudations. The finely *granular casts*, however, he thinks, cannot be considered as the product of a croupous form of inflammation. They are derived, he says, from the disintegration of atrophic epithelial and granule-cells, and are formed in a manner similar to the viscid mucous secretion in catarrhal affections of other mucous membranes.

The hyaline, waxy, or transparent casts, and the oily or fatty casts, next come under notice. The nature and origin of these have hitherto been involved in much obscurity. Dr. Johnson does not attempt to resolve this doubt; but Dr. Basham has, we think, offered a very satisfactory account of them, and also clearly refuted Lehman's statement that they consist of the membrana propria (basement membrane?) of the urinary ducts. These casts, Dr. Basham says, bear a close resemblance to the glairy viscid mucus in mild but chronic catarrh, and they are produced from the viscid hyaline fluid that is contained in all cells between the nucleus and the cell membrane. On the breaking up of the cell membrane, this becomes diffused, and is moulded in the tubes, from which it is washed out by the urine, the chemical action of which on them is such as to render them permanent, that is, prevent their coalescing to form a uniform layer, as this hyaline fluid does in other situations. These casts may have a graver import than any of the others, but this depends on the cells with which they are accompanied, and the period at which they appear.

"The significance of these hyaline or transparent casts will depend on the cell-structure which accompanies them, and on the relation, as to time, which other kinds of casts bear towards them. If they appear in the urine very shortly after the period of hematuria, they may be accepted as indicative of a state somewhat analogous to a catarrh of the renal tubes, and the case in all probability will prove remediable and tractable. In such cases here and there an epithelial cell is seen, and perhaps a compound granule-cell, but these are not numerous, and they do not increase. In other cases these glairy moulds of the tubes contain numerous abortive cells, in almost daily increasing numbers, compound granule-cells are always present, clusters of granules (botryoidal and crescentic) and free nuclei are also seen. These appearances are significant of a chronic subacute process, which, slow as it may progress, is but too often irremediable. In the third variety of these hyaline casts, few or no epithelial cells are seen. The appearances are characteristic of broken-up cell-structures, clusters of granules having more and more the appearance of fat-granules, many acquiring a large size,

and becoming even oily from the high refractive power they exhibit. In the most advanced cases the cast seems made up of these fatty and oily materials, and hence has acquired the name of the fatty or oily cast. These indicate the highest state of fatty degeneration.

"There is yet one other variety of hyaline or transparent cast, which has been called, from the absence of all structure visible in it, the waxy cast—certainly from no resemblance which it has to wax,—and which, from the difference in the diameter of them, may be formed either in the smaller convoluted tubes, or in the larger straight tubes of Bellini, the origin and nature of which has not yet been determined."

The value of the whole series is briefly summed up as follows:—

"Attention to the microscopic character of these casts will at any time enable the practitioner to estimate the nature and intensity of the disease, its advance or decline, its form, and its probable termination. The blood casts represent the period of active hyperemia and hemorrhage, the coarsely granular epithelial cast, with its compound inflammation corpuscles, and accompanied by amorphous granular flakes, stained with hematin, the period of inflammatory exudation; the finely granular, semi-transparent casts, with scattered epithelial and granule-cells, the subsidence of that stage. Transparent casts, with compound cells, with isolated, resplendent molecules, and grape-like clusters of granules, represent a stage of chronic subacute disease of grave import; and if these casts become more and more loaded with large and gradually increasing fat-granules, and even oily drops, the progress of fatal fatty degeneration is clearly marked.

"In thus treating of the subject of the degeneration of cell-development in the kidneys in morbus Brightii, it must not be supposed that these deteriorating conditions are limited to those organs. It is in them—from the nature of the materials passing out with the urine—that we are enabled during life to decide on the nature and character of the morbid process going forward in those organs. But there is reason to believe that the nutrition of most of the textures and organs of the body proportionately fails; and although not so apparent, because not manifested in a manner capable of being determined or demonstrated during life, nevertheless, that the tissues of every organ become more or less degenerate and inefficient for the purposes of life. It is certain that the cells of the liver are invariably loaded with fat in all fatal cases of morbus Brightii. And in every case which I have examined, the heart-fibre has exhibited the microscopic character of atrophic and granular, fatty, degeneration. It is worthy of remark, how frequent are the maculæ albidæ on the exocardial surface of the heart in cases of Bright's disease. They seldom amount to more than a milky opalescence of the serous surface, and the frequency of atheromatous deposits in the coats of the arteries, particularly in the aorta, must be familiar to every pathologist."

This progressive transformation of the epithelial structures is then regarded by the author as evidence of a diffused and general degeneration and decay, as well as of a local and special disease of the kidneys, and on this he founds his plan of treatment, which consists in the adoption of measures aiming at the restoration of the blood to a condition favourable to a more healthy cell development. To attain this desirable object, the hydremic or watery state of the blood must be first reduced, and even while that is attempted, the impoverished state of this fluid must be replenished and enriched by the influence of ferruginous preparations. But while a just confidence is placed in the remedial efficacy of chalybeate medicines, these will little avail if the system be not supported by a nutritious and generous diet, co-operating with a moderate but essentially necessary amount of stimulants. These principles refer chiefly to the chronic stages of the disease; but even in the acute, as soon as the symptoms of febrile disturbance have subsided, they may, Dr. Basham says, with advantage be applied; and though he believes antimonials to be very serviceable in the very early stages, when blood-casts or fibrinous casts are present in the urine, and there are constitutional and local signs of inflammation, he urges that the faintest sign of the subsidence of these justifies a modification of remedies, and marks a necessity for improved diet and a moderate allowance of wine.

We have thus sketched the principles deduced by Dr. Basham from his clinical researches, and which he fully explains in the first three chapters of his book. The remainder consists of the details of the cases themselves, each of which is in itself a study; and whether we have regard to the minuteness of observation and accuracy of delineation displayed in the accounts given of the cases themselves, or the masterly skill with which the important points of each are singled out for observation in the appended "remarks," or to the admirable manner in which the progressive changes in the microscopic characters of the sedimentary deposits are displayed in the plates, we have no hesitation in recommending the book to our readers, as one whose perusal should not be omitted by any one anxious to treat cases of albuminuria with comfort to himself, or advantage to his patients. Dr. Basham has adopted the only mode by which medical science can be cultivated with advantage. He has calmly, patiently, and perseveringly interrogated nature; and he has in this work conveyed to us the results he has obtained, on the whole clearly and concisely; but occasionally his meaning is somewhat obscured by repetition and want of arrangement.

On the Organs of Vision: their Anatomy and Physiology. By Thomas Nunneley, F. R. C. S. E., Lecturer on Surgery in the Leeds School of Medicine, Senior Surgeon to the Leeds General Eye and Ear Infirmary, &c. London: Churchill. 1858. 8vo, pp. 373.

When we received Mr. Nunneley's book, we thought that our task of reviewing it would have been an easy and a pleasant one, but we have been sadly disappointed. The book, with one exception, is a compilation of unfinished and imperfect essays on various subjects, hurried together to form a work, entitled the "Organs of Vision." It opens with a chapter "On Sensation and the Senses generally," in which the author thinks that Sir C. Bell, Dr. Abercrombie, Dr. Thomas Brown, and other equally great men, have fallen into error as to the existence of a sixth or "muscular sense," from not bearing in mind the four following facts, viz.:—

"*First*, that the nerves of touch have no distinctive difference in structure or connexion from those of ordinary sensation; *secondly*, that nerves of ordinary sensation are distributed over all parts of the body, especially to the muscles, which, next to the skin, appear to be more liberally supplied with them than any other of the tissues of the body; *thirdly*, that no other nerves which, either from their structure, mode of distribution, or peculiar connexion with the sensorium, may reasonably be supposed to be endowed with other functions, can be detected passing into the muscles; and lastly, that ordinary sensation is sufficient to account for all the phenomena and ideas referred to the so-called muscular sense."

Now, although we confess that there is a good deal in the paragraph we have quoted against the existence of this sixth sense, we think it would have been more judicious in the author to have entirely omitted any reference to the subject, than to have entered upon so difficult and abstruse a question as unquestionably it is, and to the consideration of which he has only devoted a few lines.

The second chapter is certainly better written than the first. In it are contained some interesting remarks "on the feelings and ideas ascribed to, and derived from, the sense of vision." Milton's glorious ode to light is quoted at length, as the writer justly remarks:—

"Let him who, from his full appreciation of, and enjoyment in, the delights of the senses, his almost inspired power, who from experiencing the total loss of it was more competent than any other person who ever lived to express the feelings attendant upon blindness, speak. For none but he could so feel and write."

Cheselden's case of congenital cataract—which has been referred to by every subsequent writer on metaphysics in triumph "as by direct and unexceptional experiment it confirmed the deductions which had previously been arrived at by the most careful and laborious investigations into the functions of the different senses, and an analysis of the ideas received by them"—is correctly objected to, because, first, it has been too often assumed that there was complete blindness prior to the operation; second, that afterwards there was perfect vision; thirdly, that the acquisition of sight is not sudden, but progressive; and lastly, that no observation can be made immediately after the operation, nor, in fact, for some time, until absorption has afterwards taken place. Mr. Nunneley here relates some interesting experiments on a similar case to the foregoing.

The next chapter, on Optics, although occupying fifty-five pages, may, we think, be dismissed in a few words. It is, in fact, as stupid and useless an essay as we ever read. All we can say of it is, that it certainly contains no mistake, for mistake implies some originality of idea, or of conception, or of the treatment of the subject. The woodcuts, even, are second-hand, borrowed from Brewster's Treatise on Optics in Lardner's Cyclopædia.

The fourth chapter is unquestionably the best written part of the book. It gives a good account of the anatomy of the eye and its appendages, detailing at length the most recent discoveries in minute and microscopic anatomy. The plates must be good, as they are nearly all Arnold's, whose book, we regret to say, is not as often referred to by anatomists as it ought to be. Mr. Nunneley has taken great pains to ascertain, by a series of experiments, the exact measurements of the globe of the eye, the lens, and the curve of the cornea, both in man and the lower animals, a perusal of which will amply repay those interested in this subject, but which to the majority of our readers would only prove wholly uninteresting; and as we are anxious to make some remarks on the comparative anatomy part of the book, we must conclude our brief notice of this chapter.

How strangely unequal is this work! In former pages tediously minute, and abounding with tables and lists so comprehensive as to strike the reader with the idea that patient research and unexampled industry were brought to bear upon the introduction of a volume far in advance of the day; here, however, we find numerous shortcomings, and, from the slight and puerile manner in which the subject of the comparative anatomy of the eye has been handled, we might be justified in

supposing it a compilation from some popular prize essays of the last century, so many omissions, so many illogical reasons, and not a few absolute errors. This is the more unfortunate, as, by the few pages devoted to this part of the subject, the author's labours are likely to be judged, and few indeed will be the readers who will be inclined to look upon it as a mere supplement to what has gone before. Had the writer checked his pen ere he descanted on the eyes of animals, an essay worthy of the subject and in advance of our microscopic knowledge had been produced; but, by adding this and the next chapter, he seems to have aimed at producing a manual at once comprehensive and minute; and in this he has failed signally. That a perception of light is found in most animals, even the most minute, must be apparent to every one who has studied the habits of the lower orders of life. Who has not watched with delight the expansion of Actinia, under a sudden gleam of sunshine? or the gradual unfolding of the ciliary arms of a Polype? This general perception of light is apparently independent of special organs, and is found to exist in many animals in which the eyes are unmistakably absent, although the pigmentary dots in many of the lowest forms of animals formerly classed among the organs of vision have, in many instances, far different functions, it is generally acknowledged that true eyes are to be found in many of the acephalous Molluscs, some Radiata, &c. We believe that there are true eyes in the Gasteropods. The author's description fails to convey the variety of position and size found in many of these animals, and according so truly with the variety in their habits and functions, some few of them enjoying an aerial existence, most others, aquatic; but whether the eyes differ as they do among insects, we are left to guess. Among spiders, we find a different disposition of the simple eyes, according to the manner in which these wonderful creatures seek their prey. In the Libellulidæ, although the author has expatiated on the number of facets of their most lovely compound organs, no mention is made of their simple eye-dots, found in the form of a triangle in front of their more conspicuous organs of vision; and too much stress also appears to be laid on the shape of the facets of insect eyes, as we have preparations in our possession in which the hexagonal form is greatly departed from. The eye of the cuttle-fish is well described; we should have been better pleased, however, had Dr. Powers' description of the arrangement of the nervous fibres of the optic commissure been given. In the Vertebrata the study of the organs of vision is more under command, the interpretation of the structure much easier, and a comprehen-

sive induction of the differential relations under which vision is enjoyed would do much to clear up many difficulties in its physiology. A philosophic view of the subject should embrace all the varieties of position under which this sense may be exercised. All the maximum and minimum effects of light and shade, in fact every objective circumstance calculated to influence the result, and, viewed as an organ of animal life, the prey of the animal, its habits, and the activity or sluggishness of its existence, should all be taken into consideration. In the account of the eyes of fish Mr. Nunneley has omitted many important peculiarities, and in illustration has strangely noticed the enormous thickness of the posterior portion of the sclerotic coat of the eye in cetaceous Mammalia. The existence of a nictitating membrane in the eye of some sharks, called Nictitants by Müller, is an omission, and we also must state that true eyelids with muscular fibres are to be found in some fish. We think, too, that the assertion that the lens in all fish is spherical, is far too general for adoption; the oblique and extra axial entrance of the optic nerve, and the asymmetrical form of the globe of the eye in some flat fishes, might have been more dwelt upon, particularly as minute measurements of the eye of the Hippoglossus are to be found in a former part of the work.

We are inclined to the view which the author takes of the choroid gland; its vascular nature seems to point it out as one *retia mirabilia*, and its connexion with the accessory bronchia may furnish it with a rich supply of blood; this is well seen in the carp. We would like to have had some reference to the falciform process (double, we believe, in the conger) to be found in some fish. The choroid gland is not found in all osseous fish, as in the Seleucus, Muræna, &c., although an inference to the contrary may be drawn from an expression of the author. The lachrymal gland is found (though not mentioned in the book) in serpents, especially in the genus Coluber; it also exists in the dolphin, yet the author asserts that it is absent in the Cetacea and other aquatic animals; we have found it in the *Phoca vetulina*. In Mammalia the omission of notice of the tapetum, an appearance which we believe due to a certain peculiar membrane, and something analogous to which is found in the eyes of some insects, is not once referred to. The peculiarities of the eye of the Ornithorynchus, the bony plate in connexion with the sclerotic, and the absence of the pecten in the Apteryx, ought to have claimed some attention. Such are some of the facts connected with the comparative view of the organs of vision which we think should be found in Mr. Nunneley's book; and we fear, from a marked want of due and necessary details on the subject,

he will be judged to have paid less attention to the more important part of his subject than he really has done. In his microscopic descriptions he seems to be comprehensive and exact, and has added much to our knowledge of structure; and an attentive perusal of this portion of the book is well worthy of the attention of the student. It is that on which the author may well rest his reputation. The illustrations are apparently the work of an inferior hand, and do not dovetail or correspond with the exact and minute details of histological anatomy to be found in the earlier pages of the book.

Précis Théoretique et Pratique de L'Art des Accouchements. Par le Professeur Scanzoni. Traduit de L'Allemand par le Docteur Paul Picard. Avec 111 Figures dans le texte. Paris: Victor Masson. 1859. Small 8vo, pp. 405.

Strange to say, this work has neither dedication, preface, nor introduction of any kind, either from the author or translator. It is easy to perceive, however, that the book is designed for the use of students, being nothing more than a condensed manual of theoretical and practical midwifery. It is written in a concise, didactic style, contains little discussion upon controverted points, and almost no reference to "authorities." It seems to be, in fact, a brief statement of the author's knowledge and opinions respecting the different subjects that come under examination. Some of our readers, perhaps, may ask who the author is, as the name of Scanzoni is little known to the bulk of the profession in this country. If we mistake not, he is Professor of Midwifery at Wurtzburg; and, although not the author of any remarkable discovery or book, he yet enjoys great reputation throughout Germany; and, if we may credit newspaper report, got a fee of five thousand pounds for going to St. Petersburgh to attend the Czarina. And surely the man who delivers the Empress of all the Russias *must* be at the zenith of obstetric fame!

The author makes a very clear, systematic division of his subject, without falling into the errors (so common with French authors) of artificial refinement of distinction and complex minuteness of subdivision. The work is divided into five parts.

Part I. The physiology of pregnancy; the growth and development of the embryo; the anatomical changes in the sexual organs consequent upon conception; the nutrition and func-

tions of the fœtus; the diagnosis and duration of pregnancy, &c., &c., are investigated in this division.

Part II. On the "Physiology of Parturition," treats of the presentations and positions of the fœtus, the mechanism of parturition, the phenomena of labour, the stages of labour, and general rules to be observed by the accoucheur when called to a case of labour, &c. Under this last head mention is made of the *position* of the woman for delivery, about which there is a wide difference of opinion between British and Continental accoucheurs. When, from the violence of the pains, or the straitness of the vaginal orifice, there is danger of the perineum being torn, the author advises us to deliver the woman on the *left side*, and to support the distended perineum with the right hand. "In this position," he says, "the pains are less violent, the head advances more slowly, and the central orifice yields more easily." Elsewhere he recommends a kind of "sanguinary" (*sanglante*) dilatation of the vulva where this orifice is so contracted or undilatable as to render laceration inevitable under ordinary treatment. It consists, not in dividing the perineum, as Michaelis suggested, but making incisions in the greater labia in a direction from the fourchette towards the ischiatic tuberosities. This operation he describes as being almost painless, causing little hemorrhage, and being very successful for preserving the integrity of the perineum.

Of the *binder*, which is here considered so important a part of the paraphernalia of the lying-in room, no mention whatever is made, except in cases of *post-partum* hemorrhage, when its employment is recommended as a means of keeping up contraction of the uterus. This we regard as a full admission of one of the greatest advantages claimed for the binder, and one that should encourage us to use it in *all cases.*

Part III. is on the "Physiology and ordinary management of Childbed." Among other practical injunctions here laid down is one which universally prevails among the vulgar in this country, viz., on no account to let a newly-confined woman go to sleep if there be the least tendency to hemorrhage. We have never known an instance where hemorrhage to any extent took place that the patient did not awake: but, even granting this, we should always ascertain positively, from time to time, whilst the patient was sleeping, that hemorrhage, internal or external, was not going on. With this precaution, we have never prevented a patient sleeping, if she felt so disposed; and on physiological grounds it is calculated to be serviceable in preventing or arresting hemorrhage; because sleep tends most power-

fully to restore the nervous energy, and because that during sleep the rapidity of the circulation is reduced.

The use of purgatives is dismissed in a few words: and he thinks it is of no importance the bowels being confined for three or four days after delivery. Provided they have been well freed during the labour, we see no objection to this rule being followed, as we are strongly of opinion that harm is often done to mothers, as well as to infants, by the too prevalent practice of giving purgative medicine soon after delivery. Instead of exciting the action of the bowels, we should be more solicitous, as regards the mother, to excite and keep up the action of the *skin*.

Part IV. is, perhaps, the most important division of the book, comprehending, as it does, the pathology of gestation and of parturition. The fifth and last part contains a description of the different obstetrical operations. To have made the book complete, another part on the pathology of the puerperal state should have been added; the omission of this renders the manual imperfect, and, we would say, unfinished. For surely the diseases of childbed are entitled to consideration in a work on "*L'Art des Accouchements*" fully as much as the diseases of gestation. These latter are described in Part IV. with the utmost possible brevity. M. Scanzoni fully admits, not only that *apparent* menstruation may take place during pregnancy, but that "the periodic maturation and separation of the ovum in the ovary, —the physiological acts which are the principal causes of menstruation—take place during gestation." He says he has strong reasons for holding this view. What these reasons may be, we are not informed: but, till satisfactory reasons are produced, we believe that few obstetricians will adopt his statement on the point in question, since it has been demonstrated, first, we believe, by Mr. Whitehead, of Manchester, in numberless instances of apparently normal menstruation during pregnancy, that the discharge of blood was from the abraded vagina or os uteri, and not from the cavity of the uterus at all. This discovery at once reconciled the strong arguments of anatomists *against* its occurrence, with the clearly ascertained facts of practical observers, in favour of its occurrence. Speaking of *placenta prævia*, he observes: "The ordinary cause of this vicious position is the softening of the uterine parenchyma, joined to the augmentation of the uterine cavity, in consequence of acute leucorrhœa and numerous pregnancies." Now, with all respect for so eminent an authority, we must beg leave to pronounce this to be the most flimsy, gratuitous assumption, without even

the remotest semblance of probability to sustain it—just, in fact, the sort of medical reasoning that one would hear from the most superficial reasoner. For the treatment of hemorrhage resulting from this abnormal attachment of the placenta, plugging the vagina, rupturing the membranes, or turning the child, and so accomplishing delivery, are the means he relies on, according to the circumstances of each particular case.

After having described the different modes of effecting the reduction of a prolapsed funis, M. Scanzoni candidly admits that these attempts frequently issue in failure, and his concluding remarks on this subject contain this salutary precept, which he says should never be forgotten: viz., not to have recourse to any expedients which may endanger the life of the mother. The soundness of this precept cannot be questioned. The directions for the operation of turning are most ample, indeed absurdly minute, we would say, in a treatise designed for pupils.

The forceps used and recommended by the author is the long double-curved forceps of Naegèlé. The instructions for their use exhibit the same tedious minuteness of detail as those for the operation of version. The perforator which M. Scanzoni is in the habit of employing is that of Leissnig, which is itself a modification of Joergs. It is, in fact, a species of trepan, and nothing else; and to wound the patient with this instrument would evince, he says, extreme unskilfulness, and the man who did so should renounce being an accoucheur. In this we entirely concur, as we never knew any accident happen the mother in the using of the *perforator*, and cannot conceive such to happen except through the most blundering awkwardness.

Speaking of the large mortality which has followed the operation of craniotomy (in continental practice), he expresses his conviction that the results would be more satisfactory if the trepan and cephalotribe were more generally employed in preference to the perforator and crotchet,—if the operation were not undertaken in cases of *extreme* pelvic deformity;—if as much regard were paid to the general state of the mother as to the deformity;—if the operation were not postponed till the mother is exhausted by ineffectual attempts at delivery; and, in short, if practitioners were not influenced by the absurd rule which forbids, under any pretext, perforation of the living child.

He concludes by saying he does not know of any means by which this operation is to be superseded.

He seems to be strongly impressed with a sense of the extreme danger of the Cæsarean section, and states that the number of instances where the woman has been saved by this operation are even more rare than is generally admitted. "For my own

part," he says, "I have taken a firm resolution never to perform this operation when I have at my disposal any means whatsoever less dangerous for the mother."

Did time permit, we would gladly have given a more extended notice of this book, out of respect to the distinguished reputation of its author; but it was received at so late a period before sending these sheets to press, that we have been compelled to present only a very desultory sort of analysis of its contents. We should not omit to mention that it is abundantly illustrated with woodcuts of a good description. Some of these are original, and in others we recognise familiar plates from Smellie, Moreau, and Churchill. Lastly, the book has not only a table of contents, but, what few continental works have, a tolerably good alphabetical index.

The Hygienic Management of Infants and Children. By T. Herbert Barker, M. D., &c. &c. London: Churchill. 1859. 8vo, pp. 115.

Third Report of the Clinical Hospital, Manchester. By James Whitehead, M. D. London: Churchill. 1859. 8vo, pp. 117.

Nature has been very bountiful to young children, after all. When we see the injudicious management, ridiculous dress, and injurious diet, even of many of the better class, and the filthy homes, impure air, scanty dress, insufficient and unwholesome food of the poorer class, so far from wondering at the death-rate of early life, one is rather surprised that so many escape. There is one element possessed in early life by the children of the poor to a greater extent, perhaps, than those of the rich, which may possibly have some sanitary effect. Any one who will watch a lot of poor little children at play in the street, or, it may be, in the gutter, cannot doubt that their freedom from restraint is present happiness; and as young children, thank God, have no forethought, the happiness they enjoy is in its way healthy. The children of the rich, on the contrary, are always under restraint, and however right as discipline it may be, and however it may ultimately contribute to their happiness, one cannot doubt that it diminishes present enjoyment. Of course, our observations apply fully only to young children before they are of an age to make an immoral use of their liberty.

Admitting all this, however, the large mortality and extensive sickness among the young cannot be denied, and as much

of this is due to mismanagement, and might be prevented, we are always glad to welcome books like Dr. Herbert Barker's, which take a sound, common-sense view of the matter, and are intelligible to the public; and we shall endeavour to lay his views before the profession very much in his own words.

After showing the mortality of early life, he divides the causes of that mortality into : 1. Original constitutional debility, or hereditary disease. 2. Acute diseases. 3. Want of sanitary measures, giving rise to pollution of the atmosphere. 4. Mismanagement with regard to diet and regimen in the nursery—the latter being the subject he has undertaken to treat.

First, as to diet, about which, if the mother be healthy, no medical man can hesitate. The mother's milk is the natural food of the infant, and next, that of a wet-nurse:—

"In cases where the mother cannot, or, on medical authority, must not suckle her own child, the choice of a suitable wet-nurse will require consideration. If we are careful of the quality of animal food given to adults, how much more studious ought we to be in selecting the first nutriment of the sensitive infant! In age, constitution, and temperament, it is well that the wet-nurse should, as nearly as possible, resemble the mother: of course, with the exception of any morbid traits in the latter. Sound health, regular appetite, clear complexion, good temper, freedom from every sign of cutaneous or scrofulous diseases—these are some of the chief marks of the eligible wet-nurse. Her milk should be thin, and of a bluish-white colour and sweet taste; and, after standing awhile in a vessel, should throw up a considerable quantity of cream. If dropped in water, it should assume a light cloudy appearance, and not fall to the bottom in thick drops. The diet of the wet nurse should be generous, yet temperate. Indulgence in ardent spirits must be strictly prohibited; and, if stimulus is required, a moderate quantity of pure malt liquor, such as Bass' or Allsopp's ale, may be allowed. When the nurse is—as she should be—competent to the discharge of her duty in nourishing the infant, no other kind of food should be given. To give solid food, such as *bouillie* (flour boiled in cow's milk), while there is a good supply of far superior nutriment in the breast, is a gross folly.

"Mauriceau has recorded the case of a healthy child which was fed, on the third day after its birth, with *bouillie* (or flour boiled in milk). The consequence was, that the infant died under a severe attack of colic attended with convulsions. There can be no need of any artificial food, if, during the first five or six months, the infant is applied to the breast at regular intervals of about three or four hours, by night as well as by day. The appetite of the child can be thus duly understood and satisfied by regularity of attention. 'A

single ounce of milk,' says Dr. Combe, 'well digested, will nourish more than double the quantity when it oppresses the still feeble stomach.'"

We quite agree with Dr. Barker as to the injurious effects upon mother and child of protracted lactation, and also, that gradual weaning, i. e., either allowing the child to suck by day or night only, and then diminishing the number of times it is taken to the mother or nurse, may be accomplished without any great amount of distress. Dr. Barker has given very judicious directions as to the kind of food after weaning, and also the best food if the child be spoon-fed from the beginning.

The quantity given should be judiciously regulated, so as not to oppress the infant, or to call upon nature's remedy, vomiting; and if the child is griped, let the doctor prescribe, but not the nurse. We have strong sympathy with Dr. Barker in his abuse of narcotics, and we have had proof that they are used by nurses to a mischievous extent.

During the second stage of infantile life, a change to something more substantial will be required. Bread and milk is probably the best; and Dr. Barker has furnished us with a variety of other preparations, which are worth extracting:—

"1. *Bouillie* (a French preparation), commonly known in this country as *baked flour* food, may be safely recommended to mothers, as well worthy of a trial. It is made by roasting very gently the best wheat-flour in a slow oven, and afterwards boiling, or rather simmering it for a considerable time, either in water or milk and water, then adding a little sugar. When it is well made, it should be free from knots or lumps, and not too thick.

"2. If the above should not agree with the infant (although it often does, if properly made) the *boiled flour* food may be tried. Take a pound of flour, put it in a cloth, tie it up tightly, then put it in a saucepanful of water, and let it boil four or five hours; then take it out, peel off the outer rind, and the inside will be found quite dry, which grate. A small quantity of this boiled flour should be made into food in the same way as gruel is made, and then slightly sweetened with lump sugar. New milk, provided it agree with the child, may be added to this preparation.

"3. A French spoon-food, called *crême de pain*, may be prepared according to the following simple recipe:—Take a few slices of well-baked bread, and dry them well (but do not burn them) in an oven; then infuse them in water for several hours, and let them simmer for a considerable time, adding now and then a little more water, that the sop may not become too thick. Sweeten it moderately, and add (if you please) a few drops of orange-flower water.

"4. The farinaceous food for infants prepared by Hards of Dartford, Dodson's biscuit powder, or Lemann's preparations, may sometimes be used with advantage.

"5. Bullock's semola is an excellent preparation, of very uniform strength, and has been found by the writer, when properly cooked according to the printed directions accompanying it, to agree remarkably well with the digestive organs of the infant. This preparation is rich in gluten, the pure nutritive or flesh-making principle of wheat. One part is equal in nutritive power to five parts of wheaten flour, and it is as digestible as it is nutritious. The manufacturer's well known chemical attainments have been usefully exercised in the preparation of a really valuable article of diet, both for the infant and for the invalid.

"6. The *rusk food* is very useful in some cases, and may be made with rusks, boiled for an hour with water, which should then be either strained through a sieve, or well beaten up by means of a fork, and slightly sweetened with lump sugar. Great care should be taken to select good rusks, as few articles vary so much in quality.

"7. Another useful food is the top crust of a baker's loaf, boiled for an hour with water, and then moderately sweetened with lump sugar. If at any time the child's bowels should be costive, *raw* may be substituted for *white* sugar, in any of these preparations; and should *moist* sugar not answer the purpose, a small lump of *manna* may be used instead.

"8. *Rice food* may be prepared in the following manner:—Soak some *best* rice in cold water for an hour; strain, and add fresh water to the rice; then let it simmer till it will pulp through a sieve: put the pulp and water into a saucepan with a lump or two of sugar, and again let it simmer for a quarter of an hour. A portion of this may be mixed with new milk, so as to make it of the thickness of cream, and should be given by means of the bottle. If the bowels are much relaxed, the milk may be boiled, but not otherwise.

"9. The following is a good food when an infant's bowels are weak and relaxed:—Into five large spoonfuls of the purest water, rub smooth one dessert-spoonful of fine flour. Set over the fire five spoonfuls of new milk, and put two lumps of sugar into it; the moment it boils, pour it into the flour and water, and stir it over a slow fire twenty minutes."

The chapters on clothing, temperature, air, sleep, bathing and washing, light, exercise, and amusements, nursery and nurse-maids, are very good, and based on common sense. The book is written as much for the public as the profession, nor do we find fault with that, but it renders the chapter on dentition necessarily imperfect. There is one observation which we shall extract for the benefit of our readers, on the subject of lancing the gums:—

"Many have erroneously supposed that lancing the gum should be speedily followed by the appearance of the tooth; and that when this is not the case, the wound in the gum will heal, leaving a scar which will obstruct the growth of the tooth. These errors must be corrected. In the first place, we occasionally scarify the gum when the tooth is seated deeply, for the purpose of relieving tension and irritation, rather than to expedite the protrusion of the tooth. In the second place, it is not true that when the gum heals, after being lanced, the scar will impede the progress of the tooth; for newly cicatrized flesh is easily absorbed. So much relief has been afforded by this simple operation, that we are often called upon to repeat it during the progress of successive teeth. We have insisted on this point simply for the benefit of the young mother, who may entertain groundless fears when we speak of 'using the lancet.' In many cases the operation is quite indispensable; for without it other remedies would be unavailing.

"To describe the mode of lancing the gums may be unnecessary for readers in this country, where medical aid is everywhere near; but for missionaries and other persons similarly situated, it may be useful. When the object is merely to draw blood (so as to afford relief in the first stage of irritation, or before the tooth has advanced near to the surface), the gum may be lanced freely *along the surface, but not deeply.* But when our object is to open the gum and afford passage to the tooth, the incision must be made firmly and freely through the gum, until the lancet is felt to grate upon the tooth. In the case of one of the front teeth, the lancet should be passed down in front and behind the edge of the tooth. For a double tooth two incisions should be made over its surface, crossing each other; the instrument being made to grate upon the tooth in each incision."

The second *brochure*, by Dr. Whitehead, is a Report of the Clinical Hospital at Manchester, established by the late Dr. Scheopf Merei, whose first Report we noticed in a former Number of this Journal. We cannot speak too highly of this Report as a contribution of facts. The chapters treat of the number and quality of the patients, physical development, teething process, process of ossification, growth of head and chest, faculty of walking, signs of good development, vaccination, alimentation in infancy, number of deaths and their causes, remarks on the diseases and deaths, hooping-cough, syphilis, diseases of women.

We shall present an extract to our readers as a specimen of the work, strongly advising them to read the whole for themselves. The power of walking in children is a good test of development at a certain age, and the following are the results of Dr. Whitehead's observations:—

"In 710 children with a *good* development,

At the age of	7	months, began to walk,	1
,,	8	,, ,,	1
,,	$8\frac{1}{2}$	,, ,,	2
,,	9	,, ,,	48
,,	10	,, ,,	77
,,	11	,, ,,	133
,,	12	,, ,,	188
,,	13	,, ,,	75
,,	14	,, ,,	90
,,	15	,, ,,	57
,,	16	,, ,,	21
,,	17	,, ,,	5
,,	18	,, ,,	7
,,	20	,, ,,	5
None later than at the 20th month.			710

"Of 137 children with a *bad* development,

			Began to walk.	Did not walk.
At the age of	9	months,	0	0
,,	10	,,	2	0
,,	11	,,	4	0
,,	12	,,	18	6
,,	13	,,	4	6
,,	14	,,	17	6
,,	15	,,	25	13
,,	16	,,	30	16
,,	17	,,	27	11
Between	18 months and 3 years,		200	61
After the 3rd year,			16	2
Of the last named 16, however, 15 were ricketty.			343	121
			464	

The chapter on hooping-cough is very interesting. Out of 2584 patients, there were 211 cases of pertussis. The number of deaths was 32, one only among the uncomplicated.

In simple cases, or complicated cases restored to health, the remedies were Dover's powder alone, or with camphor, camphor inhalations, emetics, belladonna, and local ointments. By the opium treatment 58 cases were treated, and cured, on the average, in twenty-eight days. By the belladonna treatment, in 67 cases, the average duration was twenty-two days.

An Essay on the Treatment of Cataract. By Mark Stephenson, M. D., Surgeon to the New York Ophthalmic Hospital; Fellow of the New York Academy of Medicine. Philadelphia. 1858. Pamphlet, pp. 26.

It has seldom fallen to our lot to peruse a more miserable attempt at an essay on the treatment of cataract. The whole subject is considered in twenty-six pages of large type. This is the more discreditable to the author, as, from a few faint glimmerings of ophthalmic knowledge that appear throughout the pamphlet, we think he understands the nature and treatment of these affections.

The operations of division, displacement, and extraction, are treated in a most superficial manner: merely a few desultory remarks on each, and a few brief quotations from various authors; for instance, *only the first stage of the operation for extraction* is described. The after-treatment of the operation is equally carelessly written; we are advised to give "diffusible stimuli" in cases where we are in doubt as to the nature of the subsequent inflammation, that is, whether it is of a sthenic or asthenic character. In Ireland we endeavour to make a correct diagnosis in such cases before we chance the treatment of them. Congenital cataract is disposed of in real Yankee style, *five lines and a half* only being devoted to this important part of the subject. We fully agree with Dr. Stephenson in his objections to anæsthetics in cataract operations; except in children, we believe them to be wholly inadmissible. Professor Pancoast's operation of "lateral" displacement is fully described, but, in our opinion, all the objections to the ordinary methods of displacement apply with equal force to this. For the operation of capsular extraction, "Mr. Bowman's blunt-pointed canular forceps" are recommended. Here is a slight mistake,—it is to our countryman, Mr. Wilde, the invention of this instrument should be ascribed, and not to Bowman. The pamphlet is adorned with five hideous-looking lithographs, intended to represent the absorption of a traumatic cataract. Were we to point out all the author's omisions, we should have to write a review three times as long as the Essay itself.

PART III.

MEDICAL MISCELLANY.

Biographical Memoir of the late Thomas Hawkesworth Ledwich, M. R. I. A., Fellow of the Royal College of Surgeons, Ireland; Surgeon to the Meath Hospital and County of Dublin Infirmary; Lecturer on Anatomy and Physiology in the Original School of Medicine, &c.

In this adventurous and speculative age large fortunes are rapidly lost and won. So long as the prosperity of a life may be involved in the events of a day, or the incidents of an hour constitute the climax of a career, success must not unfrequently come with an equivocal recommendation. A daring venture, the failure of which might have entailed ruin—a desperate hazard in which fortune and fame were alike at stake, resulting happily for their projector, seem to lose the character of rashness, and cease to be identified with what, under other circumstances, might be termed dishonesty. Each in the bustle of life contending with his neighbour for the coquetting prize, perceiving he must often boldly woo or hopelessly lose, in sympathy joins with those who achieve success. Society, entering into a compromise with its conscience, forbears to investigate too curiously the means by which the object of a common ambition has been attained, so long as its advantages only are felt. In professional life it is otherwise. Sudden success will ever be an exceptional occurrence, and, when achieved, must come as the simultaneous development of years of previous labour and study, which genius is enabled to apply to passing opportunity.

It may seem strange that the esteem and approval of a profession is not always accompanied *pari passu* by the confidence and support of the public. Yet, when it is remembered that, to secure this latter, the practical adaptation of professional acumen is as essential as its possession, and that these do not by any means stand in necessary relationship, observation at once suggests adequate explanations, why it is that many men of great minds and varied knowledge have in practical life been little known beyond their own immediate circles.

To trace the career of one who, at an early age, attained a high and distinguished position—who, by the intrinsic force of a superior intelligence, exercised material influence on the educational status of his profession—who was called to its councils and placed in its foremost ranks as a universally conceded tribute to his ability and worth—may be merely to recount those means by which many have attained past or present honours; and thus to add additional weight to the comforting assurance that merit eventually brings its reward. Yet, as the circumstances of a time are common to every candidate for distinction, and he who outsteps all competitors must have some superiority over them, natural or acquired, to account for his success, it will not be uninteresting, nor yet without advantage, to inquire the particular means by which, in an individual case, a distinguished claim on posterity has been established.

The reputation of our Irish Medical School has, within the last half century, deservedly risen to the highest position. The character for practical teaching which its hospitals had acquired rendered their wards the resort of pupils from the various Continental and American schools who wished to study disease as it is. Abroad, the Irish student was certain of being received with confidence and respect. Numbers, each year, joined a profession which, either in the public service or through the colonies, pointed to competence if not distinction. The prosperity of the hospital educational system seemed so well founded on the intelligence of those for whose benefit it had been introduced, that little apprehension was felt for its unabated success. To meet the necessity of preliminary education, Medical Schools became established under the special guidance of men possessing the confidence of the profession. These had received recognition by the several licensing bodies as legitimate theatres for instruction. It was found that in many instances, owing to the increase of numbers, the immediate public institutions were inadequate to meet the necessities of all, or to convey to each those exact and particular impressions that constitute available knowledge. Private classes, in which closer communion between pupils and instructor prevailed, were accordingly formed. In these classes oral examination chiefly prevailed. The student, acquiring recitative knowledge of those several matters which came within the range of terminal examinations, found that their aid enabled him, for such purposes, to dispense with or neglect that practical information which hospital attendance with personal manipulation had hitherto been the only means of attaining.

Classes thus threatened to defeat the object to which they were intended to be auxiliary. Though a capability of answering afforded no index of the available practical knowledge so questioned, it was yet possible to pass the several Colleges by means of the information thus acquired. Men were thereby enabled to become practitioners without previous observation, and to enter on important duties while wanting in experience. This misapplication and abuse of a system, admittedly excellent in principle, threatened

seriously to affect the well-deserved practical character of the Irish school. The convenience of private tutelage being established and generally recognised, it became important to divest it of the capability of being perverted. This could only be accomplished by rendering the class-room the reflection of the hospital and anatomical theatres. It was because the subject of our present memoir was pre-eminent in his exertions for this end, and, as we believe, placed on a permanent and acknowleged basis the private educational system, that we consider him to have deserved well of the profession.

Thomas Hawkesworth Ledwich, son of Edward Ledwich, Solicitor, grandson of the Rev. Edward Ledwich, Vicar of Agaboe, in the Queen's County, author of the well-known work on the Antiquities of Ireland, seems from his earliest years to have inherited the ability and industry of his distinguished progenitor.

Born in the year 1823 in the town of Pembroke, South Wales, where his family was then temporarily residing, he received, in the town of Waterford, their usual abode, that preliminary, general, and professional training which pre-eminently fitted him for the position he subsequently attained. Having from infancy manifested a quick intelligence and aptitude for learning, which afforded high promise of future success in whatever career of life he might ultimately select, he received from Dr. Graham the sound and enlarged general education which that gentleman's celebrated academy was known to offer to those placed under his instruction. He was thus qualified either to enter on a University career or the peculiar duties of a special profession. The latter course he preferred. Indentured to Dr. John Mackessy in the same town, whose high professional position had insured him a large general practice, both among the public at large, and the local charitable institutions, he there gained that thorough acquaintance with the rudimentary details of medicine both as a science and an art, which formed a solid basis for the superstructure of future acquirements. This period of probation was passed in extensive study, as well as diligent application to professional details. In 1841 he entered as a pupil in the Peter-street School of Medicine, then possessing a working reputation. In 1844 he was admitted as Licentiate of the Royal College of Surgeons in Ireland. The assiduity and ability he had displayed as a pupil procured him the position of Demonstrator of Practical Anatomy in the Original School, Peter-street, wherein he had been educated.

In the following year, under the provisions of the new charter, in consequence of his competency, he was received into the Fellowship of the College, at an age when many begin first to think of entering on their professional studies. He immediately commenced that course of instruction for which unceasing application to the duties of the School, well-regulated study, close attendance on hospital, and early educational labours, furnished him with ample material. His progress was such that in 1847 he became one of the principals of the School, and at once took his stand among the most able and popular Lecturers on Anatomy, Physiology, and Surgery. During

these years his labours were without intermission. Sedentary habits; continued application to anatomical demonstrations within the School; mornings devoted from an early hour to private instruction, and evenings to further study, induced a condition of the system which eventuated in recurrent attacks of hemoptysis, and so prepared the way for much future suffering. Supported by able colleagues, he now matured his plan for placing on its proper footing private professional tuition. Classes became conjoined with the School. In these, under his guidance, and through his questioning, the student learned to develop his reasoning by the study of principles, and to try his knowledge, as well as refresh his memory, by the discussion of those anatomical or surgical facts which had either formed the morning's observation, or were capable of special elucidation. Hundreds were thus led to weigh their own knowledge, and to be conscious of their own deficiency. Plates, casts, surgical appliances, and other means, renewed the impressions of actual practice, the necessity for which they were not permitted to obviate. Emulation led to progression. A generous rivalry became manifest in other institutions. It was felt that material influences could not avail against this educational progress, which had, amongst the junior members of the profession, awakened the impression that knowledge, to be valuable, should be a reality. Students in large numbers, consequent on the greater demand for surgeons which was induced, were found by his side. Men there became thoroughly initiated in the great principles, the practice of which was their future duty. Crowded lecture-rooms and closely attended hospitals proved the spirit which was abroad. Oral education, or private teaching, had triumphed over those imperfections which might have, nay, had, vitiated its practice.

It is not intended by these observations to detract from the great merit which many teachers had previously attained. Undoubtedly, the honour and conduct of the profession was safe in their hands. Public notoriety had, however, recognised the vicious operations of a good system which thus stood regenerate. Upon the process of this regeneration, and the steps by which the subject of the present observations throughout the last ten years arrived at a high and distinguished position, we now venture to enter.

A public lecturer in a large city ever undertakes a serious responsibility, especially when his subjects are of practical utility, and require not unfrequently the commendation of personal experience. In this capacity Mr. Ledwich was pre-eminently successful. Let us investigate the means by which his success was not only originally acquired, but permanently retained.

Possessing a natural eloquence, springing from its true source—warm feelings, fruitful imagination, and powerful reason, without which eloquence is but the rhetorician's art—he always approached a subject with complete knowledge, and discussed it in pure and nervous diction. Study, which had early ripened his faculties and filled his mind with new, strong, and extensive ideas, had insensibly con-

ferred a systematic style, which placed in natural arrangement the matter of his discourse. Perfect simplicity, united with polish, a lucid arrangement, and unbroken connexion of the several facts to be noticed, with conciseness and point in expression, lent a peculiar force and charm to instruction on abstruse branches of knowledge for whose exposition these qualifications were especially requisite.

When, at the inauguration of the Educational Session, he departed from the stricter precision which abstract subjects demanded, his genius took a loftier range. His addresses were then of an admirable description, copious with argument, abounding with information, full of extemporary bursts of great merit, producing at the time extraordinary impressions. On these occasions he was wont, in a fine statement of enlarged views, and a generous avowal of dignified sentiments, with a manly and somewhat severe contempt for paltry or mean opinions, to impress the youth around him with the deep responsibilities, as well as the high privileges, of the profession on which they were about to enter. Of these inaugural lectures, we regret to learn, but very imperfect copies remain. It was not, however, to such isolated exertions his reputation as a teacher was due, but rather to his continuous efforts throughout the session as Lecturer on Anatomy and Physiology, in which sciences he has left lasting evidence of his proficiency and excellence. The form of his mind was eminently calculated to sustain the position he had specially taken, that of bringing into closer relation theoretical and practical study, and so establishing, on a worthy basis, the system of private professional tuition. To this object his best exertions were given, nor could so great a work have fallen into abler hands.

In an enlarged view of general subjects he stood high; if not above all his contemporaries, at least in their foremost ranks. When discussing any one of the many abstruse matters which entered into the course, his class at once perceived they were in converse with a reasoner and teacher to whom almost every branch of knowledge was familiar. His views ranging over each cognate subject, his reasoning derived from principles applicable to other matters as well as those immediately under consideration, led, on the one hand, to philosophic generalization, and, on the other, to particular inference. The unlimited abundance of his stores made him not only free, but profuse in their expenditure. When investigating points of great nicety, the discrimination with which he treated each was such as seemed to remove all difficulties, and to dispel whatever obscurity clouded the subject.

Possessing the rare faculty of combining general views with details of fact, and thus at once availing himself of all that theory or speculation presented for a guide, with that which practical experience afforded to correct the results of natural reasoning, he led the student mind to the *practical* as the test of *speculative* questions, impressing the value of actual or ascertainable truth, rather than the impossible attainment of theoretical perfection. Regarding with utter scorn the affected wisdom of some few, who think they prove

themselves sound practical men, by holding cheap every proposal with which their own experience may be at variance, or who reject theories merely because they are new,—he entered on each investigation with a calm and dispassionate desire for truth, bringing to bear on its scrutiny extraordinary reach of thought, great power of attention, and close reasoning, a thorough familiarity with the best writers, guided by a well-cultivated and disciplined mind, without any of that squeamishness so fatal to vigour, or that ductility which renders many the dupes of their own or others' ingenuity.

He possessed to a large extent that which is the peculiar faculty of well-disciplined and firm minds—the power of imparting his own spirit to his audience. He wished them to acquire cautious and calculating habits of thought, not easily led away by a fair outside, nor apt to be drawn into extremes by specious arguments. Without expecting perfection in human knowledge, he led the minds of his hearers, by sober reflection and practical views, by actual observation and legitimate inference, to, at least, severely test the plausible suggestions of theory. Though his singular power of analysis served to show at once where the essence of an inquiry lay, yet, in aid of his search for truth, he brought a patient industry which no labour could weary, a desire for its investigation which no harshness in the most uninteresting subject could abate. Few difficulties could, therefore, offer any serious impediments to such a labourer. Regarding sound physiological views as an essential basis for either surgical or medical practice, he lost no possible opportunity of enabling the student to witness those results which the operation of the living machinery under various circumstances afforded. For this purpose experiments were carefully instituted, by which nature was placed in circumstances that might extort her secrets. Similar illustrations, he contended, were ever present in hospitals, wherein alone they could be properly studied. Thus approaching the investigation of vital phenomena with a singularly unbiassed judgment, he manifested himself and inculcated on others that practical eclecticism which had already rendered the Dublin School the bright centre of Medical Science.

Morbid anatomy, as might be expected, received in his hands additional interest. A select and valuable museum, collected from various sources, the greater number of which specimens he himself prepared, testifies to his labour and zeal. Impressed with the importance of pathology as expounding health and disease in their varied relations and mutual reactions, he therein saw the declared result of contending agencies—the exposition of health and disease in their mutual reactions. Looking to life as the element for repair, and seeing in matter material for decay, he avoided the dogmas of contending schools. With him the microscope was but a means for more closely investigating changes resulting from influences beyond the reach of the knife, as the test-tube disclosed the perfection of operations already completed within the vital alembic. Giving to matter its significance, while reserving for life its attributes, he

ever eloquently inveighed against that worse than medical fatalism, which would stereotype in fixed forms vital phenomena, or limit by special rule organic change. A confidence in the powers of life constituted the essence of his professional teaching. Medical scepticism he justly regarded as the precursor of practical infidelity—the development of both being the infallible result of ignorance of the physiological laws, associations, and sympathies which regulate and are manifested in health. Without an intimacy with these, he was wont to contend that practice must degenerate into empiricism or routine. This conviction, while satisfying him of the importance of his favourite studies, further impressed him with the value of attendance on the wards of an hospital, the beds of which he led his class to regard as pages from the book of nature, whereon were written, in living letters, principles which elsewhere could be but indirectly demonstrated. Though beneath his forceps the subject became, as it were, vitalized, as with peculiar perspicuity he pointed out particular conditions, while introducing suggestions, and offering reflections of scarcely less value than the knowledge of the matter in point, the tenor and ultimate object of his observations were, that in comprehensive and philosophic views of life lay the mainspring of future usefulness.

Such being the principle by which his teaching was guided, it is not to be wondered at, that numbers proved anxious for his tutelage. His classes became the largest in the city. This fact received special notice in the Report of Mr. South, one of the Commissioners appointed by the Government to investigate the condition of Dublin Hospitals, and Schools, and was by him justly attributed to its true cause—the efficient manner in which anatomy, as a science, was taught within the walls of the School now bearing his name, as well as to the zeal and untiring labour of himself and of his brother. His merits as a lecturer, and teacher, having thus been publicly recognised, we are induced to turn for a moment to a scrutiny of the individual, in his closer relation to the separate members of his class. We thus obtain a nearer view of that character which enabled him to accomplish success, and command respect.

Mild and gentle in his temper, of an engaging demeanour, marked by firmness and decision, of unsullied rectitude of disposition, that seemed regulated by a rigorous standard of ancient ethics, which gave, to a certain degree, a stoical colouring to his feelings; of habits completely dignified and pure, rationally pious, and blamelessly moral,—his feelings, with casual observers, passed for being less strong and lively than they really were, partly because he had an insuperable objection to extremes in all things, and partly from fear of any semblance to pretension, to which he was ever averse. It was only when wrong was attempted or accomplished, he was quick, if not impulsive, in its denunciation. Redress or contrition secured conciliation, with a generous oblivion of injury. Principle, not passion, was his guide. Gifted with extraordinary prudence, he displayed, from his earliest years, a rare discretion in all parts of his conduct.

That strength of understanding which had worked rather than forced its way through opposition, that steadiness of mind which never suffered any passion or feeling to divert it from the right course, afforded a bright example to the young men around him. The entire subjugation of all passions which carry havoc through ordinary minds, and often lay waste the fairest prospects of greatness, with the discipline of those feelings which are wont to lull or to seduce genius, or to mar or cloud over the aspect of virtue herself, preserved to him an equanimity of mind ever available for calm deliberation.

His pupils learned to regard him as a cautious and safe counsellor in all difficulties. Impressed with the deep sense of responsibility which devolved on one having daily and close intercourse with numbers, who, without experience, were subjected to the temptations of a large city, he became schooled in the stern exercise of gentle virtues. Despising the weakness which eventuated in excess, when opportunity offered, he preferred to admonish, rather than condemn. With caustic satire he thoroughly probed without lacerating the moral wound, and sought, in dealing with those whom higher feelings were inadequate to influence, to make virtue desirable by proving vice to be contemptible. Example was not wanting to precept. Experience of youth gave him confidence in the regenerating influence of knowledge. He sought to awaken amongst them an emulative spirit. Pride in the consciousness of a self-acquired and hardly won position rendered him confident in the belief that genius, however great, required study for its nurture and unceasing energy for its development. Idleness, therefore, he regarded not only as a folly, but a crime; the spendthrift of time as worse than the prodigal of fortune. Endowed with the greatest faculties of the understanding, his pupils saw him cultivate them with an assiduity which he felt should not be omitted, if deeds worthy of recollection were to be accomplished. They were thus satisfied that for ordinary capacities, application was an absolute necessity. Industry in pursuit of knowledge became characteristic of his School, and formed the best check on many, who, creatures of impulse, are not unfrequently led into dissipation through the exuberance of feelings in their nature kind and good. Having created the desire, he amply provided gratification. A diligent man of business, punctual in his appointments, regular in the distribution of his time, those who were anxious for information and progress reckoned with certainty on the presence of one who manifested resolute determination in the pursuit of his object.

He never undertook that which he felt he was, or might be, unable to perform. His attendance on his pupils was, therefore, unfailingly regular. This, to the end, was a part of the natural honesty of his character, which success could not vitiate, and which he would never permit other engagements to interrupt. It was often a lesson and a study, as well as a marvel, to witness the zeal with which, after a sleepless night of suffering, he entered on the duties of the day. His scrupulous integrity in this respect secured to him not only the sympathy, but the esteem, of all who observed the triumph of

purpose over physical debility. As professional demands on his time increased, he felt the necessity of limiting his tutorial labours to those more advanced, or immediately entering on practice. The unprecedented success which attended his exertions is the best testimony to their efficiency. In saying that to his labour is chiefly due the practical character which private medical education has of late years assumed, as well as the universal admission of its great importance, we render the best tribute to one who for some years was its acknowledged chief.

As might have been expected from such an order of mind, the desire to record original observations succeeded to the enunciation of ascertained knowledge. His contributions to medical literature are eminently practical, manifesting observation at once close and cautious. Their principles have not only been adopted by the profession here, but French periodicals, also recognising their great merit, have conferred on many of them the rare distinction of translation to their pages. Those papers to which we would especially refer attention we have enumerated below[a]. Completely free from that didactic style which argues absolutism in foregone conclusions, the inferences sought to be established develop themselves from observations insensibly leading the reader to the bed-side with their author. This, we are proud to feel, is the rare merit of Irish medical literature. These contributions are sufficient to show what might have been anticipated, when opportunity afforded a wider range.

As a Reviewer and critical Essayist, few, at so early an age, have manifested greater ability. For these branches of authorship the nature of his previous studies particularly qualified him; and here, in a pre-eminent degree, is displayed that great excellence which characterized everything to which he directed his mind. It is at all times a thankless and obnoxious office to detect brilliant fallacies, or to unveil specious errors, more especially when the safety of science renders it requisite to be severe, in order to be just. For such duties he was eminently suited. Bringing to his aid that happy union of strong but disciplined imagination, with powers of close, undivided attention, and ample resources of reasoning, which forms original genius in scientific pursuits, he was at the same time completely influenced by a genuine devotion to the investigation of truth for its own sake. This devotion is remarkably shown in the judgment with which he weighed conflicting authorities, and the freedom with which he rejected improbable relations.

[a] "On Adult Patency of the Foramen Ovale," Dublin Quarterly Journal of Medical Science, and Bulletin Thérapeutique de Paris; "On the Pathology and Treatment of Anthrax and its Modifications," Dublin Quarterly Journal of Medical Science, and Bulletin Thérapeutique de Paris; "On Subacute Inflammation of the Prostate Gland," Dublin Quarterly Journal of Medical Science; "On the Pathology and Treatment of Acute and Chronic Abscess by Drainage Tubes (Chassaignac), with the Rationale of their Action," Dublin Quarterly Journal of Medical Science, and British Medical Journal; "On the Pathology and Connexion subsisting between Gout and Gangrene," Dublin Quarterly Journal of Medical Science.

Evincing a clearness of understanding, against which sophistry set itself up in vain, the difficulties of the most complicated subject disappeared before his uniform industry, while the general fidelity of his statements, where he differed with opinions advanced, are, wherever circumstances permitted, verified by constant reference to numerous and varied authorities.

In matters of difficulty or doubt, never was a fairer or calmer tone evidenced than that which his writings testify. Above paltry or narrow views, he wished well to each fellow-labourer. It was only when he felt science was in danger that he became severe; then it was at once evident he wielded a master pen. With respect to his literary style, though no one could question its great merit, his earlier writings, as well as some of his published "Introductory Addresses," might be regarded as less idiomatic or more laboured than is consistent with perfection of composition. This was partly due to his extreme anxiety to do the fullest justice to the work under review, and partly to the fact that the mechanical transcription seldom underwent his critical supervision. His latter contributions allow of no such objections. The pure and vigorous language in which they are expressed, the easy and natural order in which the topics which enter into consideration follow one another, bear evidence that they result from a careful reflection on the whole subject; that the matters are not taken upon a plan, but each, as it were, springs out of its immediate predecessor to find an utterance which cannot be misunderstood. His medical reviews may be fairly pronounced as amongst the best extant. They constitute complete essays on the subjects which they are intended to analyze. This will be sufficiently evident by reference to our pages in which they have appeared[a].

The unexampled success with which his efforts were crowned induced him, in combination with his brother Edward, to bring out an original work on Human Anatomy, the intrinsic merit of which has been fully recognised by every student in the profession, and which it is unnecessary to do more than refer to.

As we have been thus led to introduce the name of him who, though not alone in sorrow, chiefly mourns his loss, we may be permitted to pay a passing tribute to fraternal affection without a parallel,—to self-denying and chivalrous devotion, which, in constant ministry, sustained and gave confidence to the worthy object of so great care. The living grieves for the dead! when the merits of the one are discussed, the excellence of the other should not be forgotten, since it is such unselfish and generous spirits as his, which bridge the way to immortality.

It is not to be supposed that one so energetic and successful could

[a] The following are some among the critiques from his pen which appeared from time to time in our Journal:—Adams' work on Rheumatic Arthritis; Gray on the Spleen; Curling on the Testis; Reynolds on the Nervous System; Fell on Cancer; Nélaton's Surgery; Hilton's Pathology, &c., &c.

pass through life without awakening some antagonism. Respectable mediocrity offends no one. Prosperity is unsavoury to those who disregard firmness of purpose not to be weakened by delay—steady perseverance not to be relaxed by difficulties, without which success is to genius accidental, to ordinary capacities impossible. Narrow minds of little men cannot expand even to the full apprehension of that excellence, with which superior natures are gifted, or which they have by culture attained. There have not been wanting men of little depth, and no genius to question the opinions we here advance. We point to the result. There we witness a rare instance of purely intellectual excellence, without one single adventitious aid, whether from family influence, or other causes which may be esteemed accidents of fortune, accomplishing that which is considered the ultimatum of professional ambition. Thus tracing at every step sterling worth, we see conflict with difficulties of every sort and magnitude, almost, we might add, with nature herself. He who so triumphed over each might well feel proud of a position to which he had fairly climbed, and never crawled.

The Meath Hospital and County of Dublin Infirmary has long, and deservedly, possessed the highest reputation as an educational school. This nursery of clinical instruction, wherein was founded that system for which Dublin has since become so famous, presented a vacancy in the ranks of its surgical staff. A GREAT MAN WAS DEAD. Sir Philip Crampton had more than half a century previously developed and successfully carried out the system of extra collegiate education. This, in fact, was the initiation of his world-wide renown. Having exhausted science, and written his epitaph in the hearts of all, he at length rested from his labours. Those colleagues, on whom this great light in its full refulgence had shone, were called on to honour his memory, by electing to their body one whom they hoped might follow in his steps. Their choice thus fell where they believed it could be best bestowed. He whose course we have traced thus far, was called to that high and deeply responsible position. Merit had triumphed over every other consideration. The great prize was won.

Here, where competition for distinction on a wide and ample field with generous rivals commenced, we may add, it was also brought to a close. Within a few short months another vacancy had occurred. He who founded, and he who perfected an educational system, were called to give account of their stewardship. The one, advanced in years, matured in wisdom, laden with honours, possessing a world-wide reputation, and leaving an undying fame. The other, scarce passed the threshold of youth, buoyant with hope, equipped in industry, prepared to battle with giant difficulties through the confident inspiration of a noble science. In the eulogy paid to the aged, the younger was not omitted. A great and generous mind gave suitable expression to the estimate of the profession. The Address of Dr. William Stokes, who, of living Irish medical men, is, perhaps, the most competent to speak with authority in reference to merit,

afforded to the listening and sorrowing students but additional assurance that their affectionate respect had not been unworthily bestowed.

We have limited our observations to that which might fairly be considered as a public career. If for a moment we be permitted to draw aside the curtain which veiled his domestic circle, we there find that, though his ability was exalted, it was surpassed by his virtue. Few persons had ever reached a higher place in the esteem of their contemporaries, or better deserved the position they had gained in professional reputation,—yet how infinitely short did it seem to that which he held in the affections of his family and friends. There he was thoroughly known and understood. Amiable, simple, natural and cheerful, of scrupulous integrity and of unsullied honour, free from irregularities which too often are incident to the greatest genius, his leisure was passed in studies alike calculated to exalt, and further refine an already abundantly stored intelligence. He did not believe that the truths of philosophy were those which alone were important to be studied. Greater learning occupied his thoughts. Religion, as an active principle, rather than an ostensible profession, directed the conduct of a blameless life. Married to one in every way worthy of the most exalted affection of such a heart as his, rich in friendship, and surrounded by blessings, a long career of happiness seemed in store for him. There was, but not here. In the spring-time of life, at the age of 35, he was called home.

The immediate circumstances of his death were such as, to a mind that "walked steadfastly in the right path," had no terrors. Anxious for the progress of surgical science, he had visited Paris to observe any of those new improvements in art in which that school is so prolific. It is presumed the great heat induced an attack of hæmoptysis to which he had been subject. A sudden hemorrhage came on without a moment's warning. By his side were immediately present those he most cherished on earth, a young and loving wife, a dearly devoted brother. They caught his parting breath as life closed without a struggle. At midnight the fatal summons came. The morning sun shed cheering light around; the busy world resumed its daily toil; darkness and desolation were in that chamber still.

One who profited by his labours and was encouraged by his example—who honoured his genius and appreciated his worth—who cherishes his memory, while mourning his loss—offers this tribute to the friendship of many years—believing that in no way could he more truly advance the honour, or uphold the dignity of the Irish medical profession, than in affording to those who are about to become its members the example of Thomas Hawkesworth Ledwich.

Letters addressed by Edward Jenner, M. D., to the late Samuel Bell Labatt, M. D., of Dublin, on the Subject of Vaccination. Edited by Hamilton Labatt, A. B., F. R. C. S. I.

During a period of some years several letters passed between Dr. Jenner and my father on the important subject of vaccination; unfortunately, the correspondence was not preserved; but, feeling that, at the present period, when the prevention of variola is occupying so much of public attention, any communication from the illustrious discoverer of vaccination would be interesting, not only to the profession, but to the community at large, it has occurred to me to give publicity to such of Dr. Jenner's letters as have as yet appeared amongst my father's papers. In these few letters we shall find, as Dr. Baron has well observed of the numerous communications from the same source published by him, not only "a naturalness and simplicity of style," but also "an exquisite perception of propriety in the manner of expression, and an ease and freedom in the choice of words, which has seldom been exceeded."

Besides the letters from Dr. Jenner, there is one from his daughter, Miss Catherine Jenner, in which there is a touching allusion to a sad domestic bereavement in the loss of a favourite son. The impression which this melancholy event made on the afflicted parent is described in the following passage taken from a letter addressed by him some time afterwards to his friend Sir Thomas Bernard:—"Your letters," he writes, "are always pleasant to me; I was in your debt when you were good enough to send the last, and should have answered it long ago but for a most afflictive event which has happened in my family,—the death of my eldest son, an amiable youth who had just reached his twenty-first year. This melancholy occurrence threw me into that state of dejection which renders me unfit to perform my ordinary duties, and I still feel enveloped, as it were, in clouds, so that all objects wear a new and gloomy aspect"[a].

The fourth of the subjoined letters is of peculiar interest: it refers to the remarkable case of the Hon. Robert Grosvenor, who was vaccinated by Jenner himself in 1801, and contracted small-pox in 1811. The excitement produced in London by this failure of vaccination was, at the time, very great. It is thus alluded to by Jenner in a letter addressed to his friend Dr. Baron, dated June 11, 1811:—"The noise and confusion this case has created is not to be described; the vaccine lancet is sheathed, and the long-concealed variolous blade ordered to come forth. Charming! This will soon cure the mania. The town is a fool—an idiot; and will continue in this red-hot, hissing-hot state about this affair until something else starts up to draw aside its attention. I am determined to lock up my brains, and think no more *pro bono publico*, and I advise you to do the same, for we are sure to get nothing but abuse for it." The change which calm reflection and reasoning brought about in the feelings of this great man is strikingly set forth in the letter he addressed to my father on the same case, less than a month afterwards.

[a] Baron's Life of Jenner.

Although the commencing paragraph of the last letter to my father would lead one to imagine that an interruption of some length had occurred in the correspondence, I have reason for supposing that its duration was not so long as the interval between February, 1814, and January, 1821, and, therefore, I am in hopes of discovering other letters that may prove interesting. Of the short series I have been able to produce, the last is of the utmost practical value, containing sound rules for our guidance, which the vaccinator ought never lose sight of; and when we recollect that this letter was written some years after that sad event[a], which Dr. Baron informs us was "the signal for his final removal from public life," and scarcely two years before his death[b], which had been preceded by repeated illnesses of a serious tendency, we can in some degree estimate the untiring energy and zeal which, notwithstanding sickness and domestic affliction, Jenner evinced in the promotion and diffusion of that great discovery which he had proclaimed to us.

I.

BERKELEY, GLOUCESTERSHIRE,
February 11, 1807.

DEAR SIR,—I have this evening been favoured with your obliging letter, enclosing the Report of the progress of the Cow-Pock Institution, Dublin.

Be assured it is a gratification of the highest kind to hear that the practice goes on so successfully. I must request you to present my respectful compliments to the gentlemen of the Institution, and to accept the best wishes of,

Dear Sir, your obliged and
Very faithful, humble Servant,
E. JENNER.

S. B. Labatt, M. D., Dublin.

II.

BERKELEY, *Februry* 8, 1810.

SIR,—My poor father has been for some time so much depressed on account of an afflicting domestic occurrence, that he hopes you will excuse my writing in his stead, to thank you for your kindness in sending the Report of the Dublin Vaccine Institution, with which he is much gratified. The same circumstance which prevents his writing now was the cause of his not answering your former letter. He bids me tell you he is perfectly pleased with the insertion of his letter respecting the unjust report of Lady C.

I remain, Sir,
Your very obedient, humble Servant,
CATHERINE JENNER.

To Dr. Labatt, Vaccine Institution, Dublin.

[a] The death of Mrs. Jenner, which occurred in September, 1815.
[b] Jenner died on the 26th of January, 1823.

III.

CHELTENHAM, *January* 20, 1811.

SIR,—I have had the honour of receiving your obliging letter, with two copies of the Report of the Vaccine Pock Institution, and beg you to present my grateful acknowledgments to the Governors for their obliging attention. The pleasure I feel in observing the rapid progress of vaccination in Ireland, and the success which attends it, is greater than I can express. From every part of the Continent of Europe and America I continue to receive reports of the same gratifying nature, and from the British settlements in Asia.

I have the honour to be, Sir,

Your obliged and obedient, humble Servant,

EDWARD JENNER.

Samuel B. Labatt, Esq., M. D., &c. &c.,
62, Sackville-street.

P. S.—Some months since I did myself the pleasure of sending you my last pamphlet on the vaccine subject, by the surgeon of the 7th Dragoons, who called upon me in his route to Dublin. Reports like that you have transmitted do an immensity of good among the community when made public; and, next to newspapers, there are no means so likely to make them so as magazines. Two of the most popular in this country are the Gentleman's and the Monthly. If a copy were sent to each of the Editors, they would, doubtless, be happy to insert them.

IV.

LONDON, *July* 8, 1811.

DEAR SIR,—I should long since have replied to your obliging letter had I not waited for a Report which is preparing by the Board of the National Vaccine Establishment. As this is not yet printed, I will keep you no longer in suspense. The Hon. R. Grosvenor, son of Lord Grosvenor, was vaccinated by me in the year 1801. He has lately, according to my judgment, though it has been doubted by some, gone through the small-pox. On the face and limbs it was nearly confluent. The body had scarcely a spot upon it. The pustules did not go through their course in the usual way, but desiccated more quickly; no impression is left upon the countenance, but it is just as smooth as it was before the small-pox appeared; so that although the disease threatened destruction, yet it was deprived of its mortal sting by the previous vaccination. This is the first case of failure I have met with in my own practice, which, when I consider the vast numbers into whose arms I have inserted the vaccine lymph, I cannot but consider as almost miraculous, for why should we consider the cow-pox as a more certain means of security than the small-pox? and it need not be told to you what a great number of cases are upon record of small-pox after supposed security from the disease, either from inoculation or casual infection.

Very fortunately, no less than four have started up all at once, one of them in a family of distinction, and this coincidence has silenced the clamour which most absurdly was raised up on account of Lord Grosvenor's son. This case will finally be productive of much advantage. It will set the people thinking, and this employment will convince them of what I hitherto in vain have been attempting to make them comprehend,—that the cow-pox, like the small-pox, *may be* fallible. You must remember what I have said in the little pamphlet I sent you by the dragoon surgeon on this subject.

I am obliged to you for attending to my hint respecting the excellent Report of your Institution. On my arrival in town I found it came too late to be annexed to that of the N. V. Establishment. Chagrined at the idea that so good a thing should be lost to the public, I applied to one of the members of the Privy Council, when a motion was made in Parliament, and 5000 copies were ordered to be printed. I heartily agree with you in wishing to see some measure adopted by the Legislature for rendering vaccination more general. I think it suffers more from the apathy of the people than any other cause. I will give you an example. In the city of Chichester the small-pox, through the activity of the medical men there, had been banished for many years. The populace grew heedless, and for a great length of time neglected to secure their children. While things were in this state, some kind-hearted old woman, for a small gratuity, was good enough to set about inoculation, and a most destructive epidemic followed. However, it was productive of some good among the general evil, for it exhibited this remarkable fact, many persons who at different periods had gone through the small-pox had the disease again, but not one of those who have been vaccinated[a].

As soon as the next Report is published, I will take care that one shall be sent, and remain,

Dear Sir, most truly yours,
EDWARD JENNER.

P. S.—I shall return to Cheltenham in about a week.

V.

CHELTENHAM, *February* 19, 1814.

DEAR SIR,—I must request you to present my best thanks to the Governors of the Cow-Pock Institution for their attention in sending me the Annual Report. How gratifying its perusal has been to me, you need not be told; yet how astonishing it is that the Legislature should be so torpid as to suffer our population to be absolutely murdered by such miscreants as you describe. It is not only on your side of the water that such practices are tolerated, but on this also; and I am fully persuaded that the British realms might,

[a] The greater portion of this letter appears in the second edition of my father's work on Vaccination.

long before this time, have been freed from that destructive pestilence, the small-pox, had vaccination been pushed vigorously, and inoculation prohibited. The world exhibits abundant proofs of this where the population indeed far exceeds our own: for example, South America, and in many districts in the East.

I send this by a most respectable family, the Hodgkinsons, who are returning to Dublin after a doleful visit to this place,—their attention to a sick parent labouring under the most dreadful of human maladies, I never saw excelled, and scarcely equalled. I understand you are well acquainted with them, and they often spoke of you with respect.

Believe me, my dear Sir, with great esteem,
Your obliged and faithful Servant,
EDWARD JENNER.

S. B. Labatt, M. D., Dublin.

VI.

BERKELEY, *January* 6, 1821.

MY DEAR SIR,—Having accidentally seen the captain of a little trading vessel who is going to Dublin, I avail myself of the opportunity of writing, and expressing my regret that I have heard so little of you lately.

You, probably, have seen the celebrated work of Mr. Cross, and that of Sir Gilbert Blane, both of which have made considerable impression on this side of the water; having duplicates of the latter, I have sent you a copy.

I am about shortly to publish a circular, and I shall send you one as soon as I can get it printed. The absolute necessity of destroying every vestige of herpes, whatever character it may assume, is so fully confirmed by extensive observation as to be indispensable; but I am now telling you what I perceive by annual reports you seem to be acquainted with. I cannot but lament, as I publicly announced this doctrine so long since as 1804, that it should have been so little attended to. Had it been otherwise, vaccination would have gone on without impediment; we should have heard nothing of varioloid or vaccine disasters of any sort or kind. If we see the vaccine pustule straying a few days after the insertion of the vaccine fluid, we must not be content with a superficial examination of the skin of our patient, but we shall find it necessary to make a more minute inquiry. For, after a general examination, without detecting conspicuous herpetic blotches, we shall find, perhaps, that the child has an herpetic eyelid, a speck behind the ear, or an excoriation in other parts oozes out this fluid, which produces impediment. I find that in many instances an abraded cuticle, no larger than the surface of a split pea, is as capable as a blotch of fifty times the extent of producing this effect. On this subject I need not go further with you than repeat what I have said, viz., let proper applications be made before or during the vaccine process, as

the preparations of zinc, or the ung. hyd. nitrat. lowered, and the vaccine vesicle will assume the legitimate character. When I say during the vaccine process, I mean during the early period, the first four or five days.

Believe me, my dear Sir,
With much respect, yours very truly,
Edward Jenner.

Dr. Labatt, Dublin.

P. S.—Could you send me a copy or two of that Report in which you refer to herpes as creating an irregularity of the vaccine vesicle?

Cases read before the Association of the King and Queen's College of Physicians. By Fleetwood Churchill, M. D., Professor of Midwifery to the College.

Case I.—*Scarlatina.* December 14, 1858, sent for to Mrs. S., and received the following history:—A delicate lady, suffering a good deal during pregnancy, taken in labour of her fifth child December 13, and was delivered early in the morning, after an easy labour of a few hours, Placenta came away naturally; no hemorrhage; pulse quiet and good.

During the day she went on quite well; lochia natural.

In the evening Dr. Smith found the pulse alarmingly quick and very, very weak, without anything to account for it. No pain; no local distress; no excessive discharge.

Dr. Jacob, of Maryborough, was sent for, but nothing local or general could be ascertained with any certainty to account for it, unless it might be the commencement of a latent form of uterine phlebitis. Some calomel had been given on this supposition, but was suspended on account of diarrhœa. Nourishment and wine were liberally given, with benefit to the pulse and strength. The next day, December 14, I was sent for, and arrived at 10 P. M., the report at that time being that the patient was rather better. I found that there had been no rigor; there was neither enlargement of the uterus nor tenderness of it, or any part of abdomen; no swelling; no tympanitis; lochia plentiful, but rather pale, and not offensive; urine copious, and passed naturally; pulse 140, very weak and wavy. Upon minute questioning, she told me that she had neither pain nor distress of any kind. Countenance pale, but calm and easy; neither hurry nor distress in breathing, alæ nasi quiet; no headach. I examined the chest very carefully; on percussion it was resonant everywhere; respiratory murmur full and equable; not an abnormal sound throughout. Upon examining the heart, there was no enlargement, but the rhythm of the sounds was destroyed by the disappearance of the first sound; there was no impulse, but the second sound was natural.

This, then, was the only deviation from the healthy condition

that I could detect, after a most careful examination of every organ of the body. And what explanation did it afford of the perilous condition of the patient? I confessed that explanation I had none to give; all I ventured to say was, that the uterine system was not in fault, but that the disease was in the heart or circulating fluid.

I lay down about 2 o'clock, and at 5 A.M. the Doctor came to me to say that the pulse had begun to sink again. I found her in precisely the same condition as before, with that exception. The pulse was 150 or 160; the respiration rapid, but not difficult; and, in spite of strong stimulants, her state went from bad to worse, until she lost the power of swallowing, became insensible, and finally died about 11 A.M., without pain, struggle, or convulsion.

I returned to town, I may frankly confess, very much puzzled, and by no means comfortable; but the mystery was cleared up when I heard, two or three days afterwards, that the nurse and the lady's husband were laid up with a very severe form of scarlatina. I have no doubt that the scarlatina poison, acting on a system weakened and rendered unusually susceptible by delivery, had caused death before the ordinary symptoms of that disease had time to develop themselves.

Let us now pass on to—

Case II.—On February 23rd Surgeon Morgan asked me to visit Mrs. B. with him. She had been confined, February 21, of her thirteenth child, after a natural labour, and was doing well until the morning of the 23rd, when she awoke with palpitation and a weak pulse of 140, but without pain.

I found the pulse 130, and very weak. There was a nervous tremulousness about her, and a frightened look. She complained of nothing but excessive weakness; no pain, no distress. The uterus felt rather larger than usual, but not tender; lochia quite natural, and without odour. Some milk in the breasts. On examination the lungs appeared perfectly healthy, and there was no abnormal sound in the heart, but the first sound was weaker or less loud than the second.

In short, we could find no satisfactory local cause for the patient's condition, and, in fact, no deviation from organic health, except in the rhythm of the heart. Remembering the former case, I asked if any of the family had recently had scarlatina or measles, but was told that they had not. Under such absence of grounds for correct diagnosis, it was clear that our duty was to treat the prominent symptom (exhaustion) actively, whilst we took some precautions as to certain possibilities.

This we did by the exhibition of stimulants and nutriment, and by poultices to the abdomen. Without troubling the Society with the daily report, I may briefly state that the patient became weaker on the 24th and 25th; at noon of which day Dr. Morgan thought she was dying. No local derangement could be detected at any time, and she took freely, and retained, both food, spirits, and medicine.

Her nights were rather restless, and her sleep not refreshing. On the evening of the 25th we determined to try the full exhibition of quina, and accordingly gave her six grains at bed-time, and three grains every three hours when awake.

The next day there was a perceptible improvement; she had slept better, and felt more comfortable. The pulse was only 120, though weak. The quina, claret, and Hoffman's liquor were continued.

February 27. A more decided improvement. Pulse 116, fuller and firmer; feels stronger, and had no weakness at noon, as previously. As she complained of headach and singing in the ears, the quina was omitted, but food and wine continued.

On the 28th I found her so much better that I ceased my attendance. She had slept very well; pulse 104, and fuller; no local distress; no feeling of excessive weakness. From this time Dr. Morgan informs me that convalescence progressed favourably.

Up to this point we were at sea as to the nature of the attack, although we had the benefit of Dr. Corrigan's assistance; but on the evening of the 28th I think the solution of the problem was afforded by the fact of one of the servants showing unmistakeable evidence of scarlatina.

Case III.—The last case I shall bring before the Society is one of quite a different kind. It is an example of a somewhat rare accident, a vesico-uterine fistula. Mixed cases, in which the lesion involves vagina, uterus, and bladder, are more common, and have been recorded by Jobert, Simpson, and others; but those in which the vaginal canal is entirely uninjured are rare; indeed, Dr. Bozeman, the most recent, and one of the highest authorities on these lesions, has avowed his disbelief in their existence.

The case was that of a lady, aged 30, who had been confined in India of her second child, in June, 1858, after a very tedious labour, terminated by craniotomy. She recovered pretty well, but about the tenth day remarked that the urine escaped involuntarily, and that she could pass none in the natural way.

She came to consult me as to what was best to be done, in September, 1858, bringing a note from a medical man in Wales, mentioning that the opening from the bladder was into the uterus, and not into the vagina.

On examination, in which I was assisted by Dr. Collis, I found the entire vagina uninjured, and by the speculum we could see the urine welling up through the os uteri. I then introduced a catheter into the bladder, and readily passed it through the fistula into the cervix uteri, where we could touch it with another through the os uteri. So far as we could ascertain, the fistula was in form of a vertical slit in the cervix, and was of considerable size, probably extending to the body. Her health was very good, and, what was a great advantage, the parts had not been excoriated by the urine.

It was very obvious that the choice lay between two operations, either I might slit up the cervix, expose the vesical opening, and

close it by ligature, or I might pare the edges of the os uteri, and passing ligatures through it, attempt to produce adhesion of the opposite sides, and so close the fistula.

The objections to the former operation were, that it involved more danger from the close neighbourhood of the peritoneum, and that if, escaping this, the ligatures failed, we should leave the patient worse than we found her. The latter operation had the advantage of incurring no danger, of leaving the patient "in statu quo ante" if it failed, and of affording effectual relief if it succeeded. It is true it involved, of necessity, sterility; but hardly more certainly, I think, than the perpetual current of urine through the cervix, and, as it offered a chance of relief from a disgusting infirmity, sterility appeared to me and to the patient the lesser evil of the two. As regards menstruation, with so free a communication, it was clear that the fluid would pass into the bladder and be discharged per urethram. I, therefore, gave my advice for the latter operation, but as it was novel and of such gravity, the lady and her friends very naturally wished to have the advice of some London authority. They accordingly went to London, and consulted Mr. Cæsar Hawkins and Dr. R. Lee, who, after very careful consideration, concurred in the advice I had given, and sent her back to me.

On November 25, 1858, assisted by Drs. Beatty, Sawyer, and Collis, I proceeded to perform the operation, placing the patient in the position for lithotomy, and giving chloroform. Then, separating the vaginal parietes by dilators, I pared a strip off all round the inner edge of the os uteri, and inserted four silver-wire ligatures, which were maintained in situ by Bozeman's button. The operation occupied an hour, but its conclusion was so far satisfactory that not a drop of urine escaped into the vagina. Opium was given to constipate the bowels; a catheter was introduced and left, and the patient placed in bed. The catheter was changed every day, and the vagina syringed with cold water. Up to the time we removed the button shield, on the eighth day, not a drop of urine had escaped. On the thirteenth day I withdrew the ligatures, and examined with the speculum, and found, to my disappointment, that although not a third of its former size, there was a portion of the os uteri not closed, through which I saw urine escaping.

I still kept the patient in bed a day or two, and an attack of erysipelas lengthened the time to a week, but I told her that I did not see any use in continuing the catheter. We then contemplated a second operation, but upon inquiry about the escape of urine, after a day or two, I found, to my surprise and gratification, that none escaped unless the bladder was much distended; that if she passed water per urethram, which she could do very well, every three hours, not a drop came the other way, and this improvement continued until she left this country, three weeks after the operation. Within a few days I have heard from the lady, and I find that the relief still continues.

What may be the exact state of the parts, I do not know, for I

was too much afraid of disturbing such a salutary state of affairs to investigate; but though I do not bring it forward as a case of absolute cure, I do think it not only justifies the operation, but affords the greatest hope of future success in similar cases from a like operation.

Until a few weeks ago I thought this was the only example of an attempt to close the os uteri for the cure of a vesico-uterine fistula, but I read in the Report of Dr. Simon that he had performed the same operation with perfect success.

TRANSACTIONS OF THE COUNTY AND CITY OF CORK MEDICAL AND SURGICAL SOCIETY[a].

(*Continued from* p. 242.)

SESSION 1858–59.

January 12, 1859.

Dr. O'Connor, President, in the Chair.

On the Use of the Forceps. By William Cummins, M. D.—"It is with the greatest diffidence I approach this important subject, regarding which there is a considerable difference of opinion amongst medical men, a difference which has, I think, increased of late years since the more junior part of the present race of accoucheurs entered the profession; men who are too young to remember the days of meddlesome midwifery,—of dilating, and forcing, and pulling, and every other interference with the natural process of labour; unwarrantable interference, which generally defeated the end for which it was practised, and was too often productive of the gravest consequences; which Osborne, Denman, Blundell, and others raised their powerful voices against as unscientific and dangerous practice, thereby producing a violent reaction against art, which, as is too often the case, became excessive, and rushed into the opposite extreme of neglecting to render assistance, except in cases where nature, struggling against a difficulty, to overcome which *natural* efforts were unequal, had to use an unusual amount of force, far more dangerous to the maternal structures than art for the accomplishment of delivery; or, still worse, became powerless to overcome it; so that too often death had already set his mark upon both the mother and her babe before the timid operator could make up his mind to render assistance.

"Even some of the excellent modern works on midwifery, which are in the hands of every student, bear the impress of this reaction, and point to the horrible train of symptoms which mark powerless

[a] These Reports have been furnished to us by Dr. S. Henry Hobart, Secretary to the Society.—Ed.

labour, or at least its onset, as the index for interference with the forceps; nay, more, this instrument is treated of as so 'dangerous an iron instrument,' that it really requires no ordinary amount of pluck on the part of the young operator to make his first essay with it; the consequence of all this being, that in many cases the forceps is not used early enough to give the infant even a probability of escape, and diminishing the mother's chance of perfect recovery.

"Now it is not with a view to laying down any fixed and certain rules for the guidance of the practitioner in solving the all-important question, as to the time when art should step into the rescue of the patients in any given case, that I bring this matter before the Society; it is more for the sake of hearing the opinions of so many experienced men upon the general principles which have guided me in my own practice, because, for the reasons I have already hinted at, books are not generally to be trusted as safe guides in this matter.

"I have said that there appears to be a gradual revolution at present taking place as to the period of labour when the forceps should be used; most medical men that I have spoken to on the subject, especially the more junior part of the profession, use this instrument far oftener than the eminent masters under whom they studied, and speak of the operation as anything but a dangerous one. Drs. Sinclair and Johnston also, in their new work, state that there has been a gradual increase in the number of forceps cases in the Dublin Lying-in Hospital of late; and Dr. Hamilton, of Falkirk, in a paper published in the second volume of the Medico-Chirurgical Review for 1853, gives statistics of 300 cases which occurred in his practice, which, when compared with those from other sources, are startling as to the number of infantile lives seemingly sacrificed to delay in using the forceps. It is a pity his statistics are not on a more extended scale; but such as they are, his conclusions from them are sufficiently important to warrant my making the following short quotation from his paper:—

"'We see them (the forceps) used in the ratio of 1 in 120 by Dr. Laurence, Montrose; 1 in 472 by Simpson; 1 in 617 by Collins; 1 in 553 by Ramsbotham, with very nearly the same ratio of mortality, viz.,—1 in 4 or 5; while I have used them in 1 in 7 with no mortality in 43 cases. We see also the result to the mothers upon the whole. Dr. Clay states Collins' mortality over all as 1 in 16; Dr. Simpson's, in the Report of the Edinburgh Lying-in Hospital, is stated at 1 in 22; Dr. Laurence gives 8 in 368, or 1 in 46; while I have 1 in 298. The favourable results obtained by me, I have already said, appear to me to have arisen from the second half of labour having been shortened; and my inference again, therefore, is, not that the use of instruments is to be discouraged in all but exceptional cases, but rather that they should be used sooner and much oftener than is generally done.'

"Now while I think that the comparison Dr. Hamilton has made tends to support the last clause of these remarks, that instruments should be used sooner and much oftener than is generally

done, yet I cannot see by what process of reasoning he draws from them his condemnation of the rule that the use of instruments should be discouraged in all but exceptional cases, for certainly, in the immense majority of instances, nature is fully adequate to the completion of the great work of reproduction.

"It may be said that Dr. Hamilton's cases were not legitimate forceps cases at all, and that thus can be explained his great success; but this is inadequate to a full explanation of it, as his infantile mortality from the labour process, generally including forceps cases, was 1 in 298, far less than any recorded statistics I have seen. However, we must be most cautious not to allow ourselves to be drawn into the error of using instruments more frequently than absolutely necessary by such success as Dr. Hamilton's; extremes of all kinds are bad, and it is especially so in this case, as the temptation is very great for the midwifery practitioner to shorten the sufferings of his patient and the tedium of his own attendance, by performing a brilliant and generally easy operation. It is, therefore, the more necessary, when a revolution is taking place in favour of the earlier use of this valuable instrument, that it should neither be stayed in its progress, nor yet allowed to proceed too far, but that, as far as possible, rules should be laid down for the guidance of the student.

"Now some authorities propose, as a rule, that when the second stage of labour has lasted a certain time, varying from twelve to twenty-four hours, assistance should be rendered; and others, that when certain dangerous symptoms present themselves, the forceps are called for; while others again combine the two, saying that after such a time, if certain symptoms are present, the operation should be performed. Now while there can be no doubt that if even the most incipient symptoms of powerless labour have commenced, we should immediately proceed to deliver, and that such symptoms may arise in a most unexpected manner very early in the second stage, proving that no rules drawn from its duration can be relied upon; yet I think it far from being scientific or safe practice to make either time, or symptoms, or even both conjoined, furnish the rules which are to guide the practitioner in selecting the moment when an operation is most likely to succour the two patients committed to his care.

"Nature has provided that a certain amount of expulsive force is to propel the fœtal head through a cavity admirably adapted to afford the necessary amount of resistance, and lined by delicate tissues capable of sustaining the requisite degree of pressure, under the condition of its being only applied at intervals, to secure which a wise provision exists; nay, more, she has provided that when a difficulty is present which must be overcome, the expulsive force increases for the task; besides not only the soft parts, but the fœtus also, is capable of enduring the increased pressure to a marvellous degree; in fact, they are provided with a balance of endurance over and above what is necessary in purely natural labour; but the medical attendant should never forget that there is a limit to this endurance on the part of both, and that nature, acting with unnatural force—if I

may use the term—may at length destroy the life of the infant and inflict grievous injury to the soft parts of the mother: so that the question for him to decide is not whether nature can complete the delivery, but whether nature or art can do so with least risk to mother and child.

"The resources of his art and the amount of skill which he possesses in their use thus enter into the question; for, being a comparative one, it is evident that the more dangerous is the instrument, and the less skilfully used, the longer must nature be trusted to. I think myself the forceps is far from being the dangerous instrument it has been represented, if used with ordinary care, and that the requisite amount of skill in its application is easily acquired; but more of this anon.

"I have made this digression from my immediate subject, to introduce what I consider the source from which rules can be best derived for fixing upon the critical moment for interference,—the rules, in fact, which influence me in my own practice, and which, though not, perhaps, as definite as could be desired, are, I think, as much so as the subject admits of, for much must necessarily be left to the judgment and discretion of the practitioner in each individual case he is called upon to attend.

"1st. If after dilatation of the os uteri, expulsive pains have expelled the fœtal head to a certain point where it is arrested, the pains still continuing forcible, it is obvious that some obstacle exists to delivery; if, again, it is ascertained that the obstacle is not one which can be removed, such as distended bladder, imperforate hymen, &c., &c., then the practitioner must consider whether nature has had a fair trial, and whether what further he has to expect from her is likely to be more or less injurious to mother and child than assistance with the forceps; and by bearing in mind that though both are capable of enduring considerable pressure without injury, yet that there is a limit to such endurance, especially on the part of the fœtus, he will be able to determine correctly, without reference to time or symptoms, as to when the forceps should be used.

"2nd. If the head is only partially arrested, the same train of reasoning may be brought to bear, with this difference, that we may be more sanguine of nature's completing the delivery without doing mischief, if progress is made, no matter how slight.

"3rd. If the head is impacted, the forceps should be used without loss of time.

"4th. If there is the least symptom of the constitution sympathizing, or if convulsions or other complication, making speedy delivery desirable, be present, the forceps should not be delayed.

"5th. If labour pains have become feeble, or ceased altogether, *without prospect of renewal*, and that *ergot* has failed in exciting the uterus to action, the forceps are necessary, for although in such a case there is not as great danger as when the uterus is acting forcibly to overcome an obstacle, yet there is danger enough to warrant the use of the instrument; and, after all, in cases of this kind the

operation is so especially easy and harmless, that there is no object in postponing it, and it is extremely unwise to wait for the setting in of bad symptoms.

"Now it may be said that Nos. 1, 2, and 5, of these rules are so indefinite that they merely cut the gordian knot, without unravelling it. I grant they leave a large discretion to the practitioner, but what rule in medicine is not more or less indefinite, and how possibly can any definite rule be made for a question into which so many points for anxious consideration enter. But, whatever may be their defects, they are founded upon the leading principles which apply to the question, and, as such, are certainly superior to rules drawn from symptoms which, if possible, should never be allowed to arise, and upon the duration of labour, which are worse than useless.

"I have not preserved notes of my forceps cases previous to changing into the Blackrock district; but, although I had many trying cases, I do not remember having lost any of the children, and certainly no mother ever suffered from the operation, or was more tardy in convalescing than in natural cases. Since coming here, a period of three years, there have been 236 births among the poor of the district, which, although generally attended by midwives, certainly came under my immediate care, whenever the labour was at all protracted. Of these, there were five forceps deliveries, or 1 in $47\frac{1}{5}$; four of the children were born alive, and did well; the fifth, a very complicated case, although alive when the head was born, perished from long delay before the shoulders could be extracted, so that we may conclude the forceps had no share in the death. All the mothers convalesced rapidly. These statistics, although on a very small scale, tend to bear out the views of Dr. Hamilton; for the proportion of forceps cases is much greater than that of Ramsbotham, Denman, Collins, &c. &c., and the mortality less; while, if they had been left to nature until dangerous symptoms arose, or until the time which midwifery works recommend had elapsed, the mothers would have suffered much more and run greater risk, and I am sure many of the infants would have perished. It is a point not to be omitted, too, that the horrible alternative of using the perforator only occurred once, and that for a hydrocephalic head.

"There is a peculiarity in my mode of using the forceps, which has facilitated its application so much in my hands that I shall not apologize for detailing it. I believe it was suggested to me by the manipulation of dexterous surgeons for avoiding the triangular ligament in introducing a catheter into the male urethra; however, I find, on inquiry, that I cannot claim originality for it, as my friend, Dr. O'Brien, of Monkstown, who is celebrated for his skill with the instrument, informs me that he has been in the habit of using it in the same way for many years with the greatest success. Dr. Churchill also makes some allusion to a similar process, in his admirable work on Midwifery, in cases where the *head is situated very low down;* it is simply to pass each blade in turn upwards *in the hollow of the sacrum* between the two first fingers of the left hand and the

fœtal head; next to carry the handle, with a gentle sweeping motion, holding it very loosely, and depressing or raising it according as it is the upper or lower blade, towards the perineum, a motion which will oblige the blade to slip, of its own accord, over the head into any position that may be desired, without its convexity being jammed against the tuber ischii, where its point first impinges upon the head, as it is sure to be if the tuber is not avoided in the manner I have described. The forceps I use is slightly curved; its length in the blade is $8\frac{1}{4}$ inches, and the handle $5\frac{1}{2}$, in all $13\frac{3}{4}$ inches; it is rather too short for operations above the brim, especially if the head is larger than natural: but the less the forceps is used before the head has entered the brim, the better, except in cases where, with a probability of saving the child, the crotchet is the only other alternative, for it is often impossible to ascertain the size and condition of the head, or its position, with any degree of accuracy.

"Two cases have occurred to me where, from the great size of the head *above the brim* (one hydrocephalic, the other that of a child which weighed $12\frac{1}{2}$ lbs.), the handles could not be made to come quite *close* together in any position, although they locked perfectly well; in both cases the blades slipped off when powerful traction was made; were reapplied more than once with the same result; and in the latter only was delivery completed with the forceps, the child being dead. I think, *under such circumstances*, it is better at once to terminate labour with the perforator and crotchet, after the forceps has once slipped off, rather than risk repeated applications of the instrument for the very slight prospect of the child being born alive. This opinion may be dissented from, but although both these cases recovered without a bad symptom, such could scarcely have been anticipated; and my experience of the suffering they endured, and the risks they ran, would make me hesitate before subjecting any *similar case* to a repetition of the forceps *above the brim*, with so small a probability of saving the infant.

"In conclusion, permit me to express a hope that in recommending the earlier and more frequent use of the forceps, I have not been misunderstood to sanction any operation, except in cases where such is *decidedly* less dangerous to mother and child than the continued operation of nature unassisted: for while I object to the rule, never interfere as long as nature is equal to the delivery—because I know that in terminating the process under difficulties nature may do irreparable injury to her charge, far more than art—yet I think that in all cases the use of instruments should be postponed *to the last moment* consistent with the welfare of the mother and her offspring.

"P. S. Since the above was written, I have had another forceps case, in which the blades were readily applied in the manner above suggested, the result being most favourable to both mother and child."

JANUARY 26, 1859.

DR. GREGG, VICE-PRESIDENT, in the Chair.

Cases of Lead-poisoning. By PROFESSOR O'CONNOR, President. —The following is a brief abstract of three cases of lead-poisoning treated in the Mercy Hospital. In the first there was complete debility of the forearm, affecting particularly the extensor muscles, but also such weakness of the muscular system generally as almost precluded the patient from walking, or even standing for any length of time. There was great pallor of the countenance; some degree of emaciation, with loss of appetite, and a feeling of despondency. The treatment, which was successful in about five weeks, consisted of sulphur baths, purgatives, followed by tonics, both of iron and quina; and, when the general health was improved, strychnia, both internally and externally.

The second case was that of a man in the same employment as the person just referred to, namely, that of a gas-fitter. He applied for relief for severe pains in the abdomen and constipated bowels, and loss of appetite. The inspection of his gums left no doubt as to the character of his disease, rendered probable by the nature of his employment. This case quickly improved under the use of baths, purgatives, and tonics.

The third case was that of a woman with an exteusive burn on her back, which was dressed for several weeks with the acetate of lead ointment. The blue line on her gums attracted attention sufficiently early to prevent a perseverance in the use of the ointment, which would soon have produced the worst symptoms of the disease.

Professor O'Connor made the following remarks in reference to these cases:—"It will be seen, from what I have just read, how unsuitable are the names occasionally given to this disease. The designation of 'painter's colic' is inappropriate, as many of the cases never suffer from colic pains, and equally so is that of 'saturnine palsy,' which only affects the patient when the poison exists for a long time, or in large quantity in the system. The only general characteristic is a cachetic condition, which is recognised to be the result of lead-poisoning from the peculiar blue line that marks the gums in all cases. If this very easily recognisable sign were known generally to the workers in lead, many would be warned in time to desist from habits which may ultimately lead to the ruin of their health. How fortunate if we had any similar mode of recognising the cause of the cachexia that precedes the more palpable manifestation of scorbutus, syphilis, tubercle, and many other diseased conditions of the system, so that our treatment may meet the disease in its nascent form! One of the most striking facts connected with this disease is, that the poison exerts its influence principally, if not entirely, on the extensor muscles of the forearm. How is it possible to explain why a poison circulating in the blood, affecting the digestive organs, and sometimes the brain, should fix on a certain set of muscles not in closer relation with it than any other? Seeing the utter impossi-

bility of explaining, or even of crediting such an anomaly, I am disposed to question its accuracy, and to assert that the greater weakness of the extensors might be explained without assuming that they were more deeply imbued with the poison than were other muscles. In the first place, we find that when the patient is very much under the influence of the poison, all the muscles of the body are more or less affected, as illustrated by the first case related. 2nd. We must observe that the muscles of the forearm are employed in a finer class of movements than the other muscles of either extremity, and that debility in them is therefore more apparent. 3rd. Comparing the flexors and extensors of the forearm, we find the former are more than double the size of the latter, and are supplied with a proportionately large quantity of nerve matter; also, that the flexors are more energetically affected in all the employments of life, the extensors being scarcely used except to replace the fingers in a position for renewed action. For all these reasons we may readily suppose that if both sets of muscles were equally affected by the poison, the flexors must longer resist its influence; and observation shows that the difference is only in degree, for neither set of muscles retains their normal power. A fact illustrative of this point is the position of the arm and forearm when all voluntary power is withdrawn from them in hemiplegia. Here the fingers and forearm are flexed, the stronger antagonist muscles prevailing over the weaker, when organic contractility alone acts. May not the opisthotonos of tetanic cases be more readily explained by attributing it to the greater mass of extensor muscles which are all through life employed in sustaining the upright position of the body, than by supposing that the nerves distributed to these muscles were specially under the influence of the disease?"

February 9, 1859.

Dr. O'Connor, President, in the Chair.

Case of Tumour growing from the Rectum removed by the Écraseur. By Thomas Gregg, M. D., Surgeon to the South Infirmary.—"Mr. W., aged 58, consulted me in consequence of what he called piles; he was a man of active habits, being a resident in the country, fond of hunting, shooting, &c.; he always lived well, and generally, up to the period of his first attack (about two years ago), took two or three tumblers of punch. Since then he has entirely left off this latter habit; he was a man that had always enjoyed good health, very robust, inclined to fat, and of florid complexion; he had in an earlier period of his life been very much annoyed by varicose veins, particularly in the right leg; about two years since, he was attacked with diarrhœa, which was followed by hemorrhage from the rectum, accompanied by pain in the part, increased upon lying on his back; since this time he has never had a solid discharge from the bowels, which generally were evacuated three or four times during the day, and frequently as often during the night, and

always attended with considerable hemorrhage, which he informed me was very considerable every time, so much so as to saturate his clothes with blood, making, as he says, his life miserable. The pain has not, however, increased in severity since the first; about six months since he perceived the tumour outside the anus, and considerable prolapsus of the rectum, which he immediately returned; and it required his manipulation whenever the bowels were evacuated. Finding his strength declining, he came to Cork, and consulted Dr. Townsend and myself; I had known him when in good health, but had not seen him for the last three or four years, and so great was the alteration in his appearance that I would scarcely have known him; from being a very large man, and, as I said before, florid, he is now emaciated, with an anxious, pale face, lips livid, eyes sunken, pulse feeble, 100, but regular, tongue and gums pallid; in fact, he has all the appearance of a man labouring under some organic disease; the stethoscope, however, proves both heart and lungs sound; there is no enlargement of the liver. On his relating his history, we examined the rectum, where a tumour about the size of a hen's egg, with a broad base, was discovered, exceedingly vascular, bleeding at the slightest touch, the hemorrhage not easily restrained. The tumour, which I present this evening to the Society, was firm in feel, and to all appearance looked like a malignant growth; it was determined, however, in consultation to remove it, as the principal symptoms he laboured under were produced by excessive and long-continued hemorrhage, which, if not restrained, must inevitably terminate his existence. Accordingly, the next morning, 3rd February, I removed the entire mass by means of the écraseur; he did not suffer much pain during the operarion, and as soon as the tumour was strangulated by the chain, all hemorrhage (which before was very considerable) immediately ceased; he was ordered an opiate, and in the evening he was most comfortable. On visiting next morning, he said he slept well, what he had not done for months; his bowels were not disturbed until the morning, and he expressed much surprise that there was no bleeding, nor was there any prolapsus of the rectum. I examined the part to-day, now sixteen days after the operation, by means of the speculum, and the rectum is perfectly healed, and no appearance of any new growth; he requires, however, to take the opiate during the day, as the mucous membrane of the large intestine is still irritable, the matter passed from the bowels being still very fluid, offensive, and in great quantity. So far as the operation is concerned, I look upon it as most successful, both as to restraining the hemorrhage, thereby in all probability adding a few more years to his life, as well as considerably conducing to his personal comfort."

Dr. Finn communicated the following case, and exhibited pathological specimens:—

Anasarca; Albuminuria; Hypertrophy of both Kidneys; Incipient Disease of the Suprarenal Capsule; Subarachnoid Effusion.—Robert Jennings, aged 44, of very tall stature, and moderately

stout conformation, was admitted for the third time on the 13th December last, into the North Infirmary, labouring under anasarca and albuminuria; on this, as on the two former occasions, the œdema commenced in the face.

History of Case.—He had been a soldier, and served during the Crimean campaign, and in the trenches before Sebastopol; he stated that he suffered much from the many privations which signalized the early period of the siege; had been very intemperate in his habits, and was invalided at the close of the war for a sore leg, which subsequently healed up; since the date of his last admission to hospital to that of his death, he suffered both from diarrhœa and irritability of stomach, the latter symptom having resisted the several modes of treatment employed for its relief; about three weeks before death effusion into the cavity of the peritoneum was superadded to the symptoms already noticed; on the 26th January, convulsions supervened, which continued almost uninterruptedly to the following morning, when he was released from his sufferings.

Post-mortem.—On separating the abdominal parietes, a considerable quantity of serous effusion escaped. Both liver and spleen were much congested; the latter was much increased in volume. The stomach appeared to be diminished in capacity; its lining membrane, which was rather irregular and corrugated, was generally pale, with the exception of the lesser curvature, which was the seat of considerable congestion; both kidneys were remarkably enlarged; the surface, however, was smooth and pale in both; the right kidney weighed twelve ounces, six drachms, and one scruple; the cortical substance was pale and slightly granular; the medullary portion was highly injected. Examined under the microscope by Professor Corbett of this city, the renal blood indicated a decided increase of the white corpuscles; the right suprarenal capsule presented a deeper shade than in the normal state; it was moderately increased in size, and its interior contained a small quantity of dark sabulous matter; in the brain was found some subarachnoid effusion, and the cerebral matter appeared to participate, but to a less extent, in the general congestion.

Remarks.—It is worthy of remark, that the gastric disturbance above noticed only manifested itself during this patient's final illness, though it is to be presumed that the conditions favourable for its production, viz., congestion of the several adjoining solid viscera, had been in existence for a long time previous. A question suggests itself, whether there existed any relation between the *incipient* structural change in the suprarenal capsule and this symptom? In the group of symptoms, which Dr. Addison associates with disease of the suprarenal capsule, he assigns a prominent place to irritability of stomach. In this case no discoloration of the skin was observed.

Hemorrhage supervening upon the Extraction of Teeth. By Mr. Grattan.—"It is of two kinds, venous and arterial. The former

is one of not very common occurrence, but, when it does happen, it is sometimes very embarrassing. I have found it to arise in two kinds of constitutions—the young and plethoric, and the old and infirm.

"Case I.—Mr. ——, a medical gentleman, called upon me, stating that he had a very bad dens sapientiæ in the lower jaw, which he wished to have extracted; he was of a full, plethoric habit, and sanguineous temperament; the tooth was perfectly firm, very much decayed, and strongly bound down by fibrous bands extending from the lateral ligament. I had to separate all the attachments, and on applying the forceps, the tooth was easily extracted. Venous hemorrhage immediately took place, and in less than ten minutes he lost over eight ounces of blood; it ran from the mouth just in such a stream as it would flow from the opening of a vein in the arm; on applying a steady pressure, and approximating the parts for about two minutes, then giving him as hot water as he could possibly bear to hold in his mouth, all bleeding ceased; he was perfectly free from all unpleasant symptoms in about ten minutes; the hemorrhage did not return.

"In the old and infirm, the state of parts are entirely different: the teeth, many of them, loose and ulcerated in their sockets; the gums generally much swollen; great fetor from the breath; the system rapidly breaking down.

"Case II.—Mr. ——, a gentleman about 72, called on me; he stated that he had a very loose tooth in the lower jaw, which gave him a great deal of annoyance, and that I would have no difficulty in extracting it. On examining the mouth, I found the gums all swollen, the mucous membrane paler than in sound health; there was ulcerative action going on in nearly all the alveolar sockets; the tooth that was annoying him was the second molar in the under jaw; on its removal, venous hemorrhage at once set in, and he lost about ten ounces of blood in a very few minutes. As in the former case, compression and very hot water were the only means used; all bleeding ceased in about twenty minutes. These two cases will sufficiently illustrate venous hemorrhage; it is not a common occurrence, and I have never found it to occur except in the two posterior molars of the inferior maxilla.

"The other kind of hemorrhage is arterial; it is not of unfrequent occurrence, and I have found it to occur oftener in cold than warm weather; the bleeding generally does not take place at the time the tooth is extracted, some hours intervening—from six to twelve. Constantly the patient will be settled for the night, when he will find suddenly his mouth filling with blood, the bleeding constantly continuing, though using every means in his power to repress it.

"Case III.—Mr. ——, a gentleman of about 19 years of age, very tall and delicate, called on me about 10 o'clock in the morning, to extract a molar tooth from the superior maxilla; the tooth was a very large one, but otherwise offered no difficulty to its removal. He left me in about twenty minutes, quite well and free from all

bleeding, and remained so up to 8 o'clock at night; the blood then commenced to flow from the alveolar cavity, and continued to do so during the entire night; at half-past 8 in the morning he called at my house to know what was to be done to stop it. He evidently had lost a large amount of arterial blood. He had a hemorrhagic pulse; lips pallid; and an anxious cast of countenance. On examining the mouth, there was a large fibrous tumour, having its origin in the cavity of the maxilla; it was about the size of a pigeon's egg, forcing the cheek outwards; fibrous bands extended from it, and were interlaced around and between the teeth; on touching any portion of the tumour, arterial blood flowed from it, though no pulsation on moderate pressure was perceptible; on a more firm pressure you could feel a slight pulsation, and at the root of the mass it was very strong, pressure there causing jets of blood to issue from various points of the tumour. The treatment adopted was using steady pressure along the line of the jaw, using both forefingers; by this means I separated the whole mass, leaving sufficient to fill the alveolar cavity. You must not allow any of the clot to be above the edges of the gum. I then gave him some hot water to hold in his mouth; the temperature of it must be as high as 130 degrees; at that heat it is a most powerful styptic. All bleeding ceased in about three minutes, and he left me well, but on going up stairs to bed, as I directed, he fainted. I had him fed on mutton-chops and porter; for three days he could not get into the erect position, giddiness coming on. I think he was more than a fortnight before he recovered the loss of blood.

"I could give you other cases, all bearing on the above. In hemorrhage no caustic should be applied; all of them I have found to do mischief. If the bleeding should continue after the removal of the fibrous mass, lint steeped in a strong infusion of matico and placed over the cavity from which the tooth had been extracted, so that when the mouth is closed, pressure will be made on the part, will cause all bleeding to cease in the course of an hour.

"Case IV.—Miss B., aged about 20, came to me to have a molar tooth extracted from the lower maxilla; she had been suffering toothache for over four weeks; the tooth was very firm, and required a good deal of force to remove it; she left me about 11 o'clock in the morning, and had no hemorrhage during the entire of the day. About 9 o'clock at night it came on, and continued until I saw her on the following day, about 12 o'clock. She was in bed, very much frightened. Countenance very anxious; pulse hemorrhagic. On examining her mouth, I found a large tumour, the fibrous bands of which were wound round the teeth, some of them extending to the back of the fauces, causing a feeling of constriction, with an inclination to discharge the stomach; on compressing the tumour, jets of arterial blood came freely from its surface at various points; towards the base pulsation was very strong; on removing it as in the former case, by using the fingers, I found that in one point the clot in the cavity was not quite perfect; from one small opening arterial blood issued; I compressed the clot firmly down, and gave

the patient very hot water for about five minutes; the jet ceased almost immediately, a very trifling oozing remaining, which, by covering the part with some lint dipped in the infusion of matico, stopped altogether in a few minutes. She had no return of hemorrhage, and, except for a little debility, she was quite well the following day."

March 9, 1859.

Professor O'Connor, President, in the Chair.

Case of Temporary Hemiplegia caused by the irritation of Lumbrici in the Stomach. By John Williams, A. B., M. D.—"Affections of the nervous system are now happily assuming a material form, and the vague assertion, 'it is some nervous affection,'—so convenient a term when doubt existed as to the nature of many cases,—which now exhibit themselves in characters that can be deciphered, is rarely indeed employed as the cloak of mysticism. But, although rapid strides have been made in reducing to what is tangible, affections that previously were almost imaginative; and eliminating from a chaotic mass of signs and symptoms those which are characteristic of diseases of the nervous system now easily recognisable—thanks to those careful investigators, who well may boast of including within their ranks the name of Robert Bentley Todd—yet, there still remain many affections of the nervous system—functional derangements, which cannot be easily accounted for, and on which pathology has, as yet, shed but a dim and uncertain light. Why it is, that from continued mental depression derangements of the cerebro-spinal system assume forms so varied, differing not only in degree but in kind, is not as yet demonstrable; will it ever be so? Why it is, that a like diversity is to be seen in those nervous affections that result when the powers of the system are reduced to a very low ebb from many other causes, the duration of which is either long continued or transitory, is to me inexplicable; and likewise does an impenetrable veil hide the causes of the variety, so frequently to be met with, in those functional derangements of the cerebro-spinal system which result from reflected peripheral irritation. Why is this the case; and shall a clear light ever dispel this darkness? I fear not, and for many reasons, but particularly that we have effects alone to deal with—the cause in too many instances remaining undiscovered, or else unrevealed until a considerable period has elapsed after the effects have worn away. And another reason, an obvious one, is, that in very many remarkable cases which had a fatal termination, the most carefully conducted dissection found nothing to disclose as even a remote cause. In early life, one of the most fertile causes of perverted nervous function is the irritation caused by worms in the intestinal canal. But can we decide with certainty that in a given case such and such effects are due to such a cause. We could hardly do so, and surely in after life greater difficulty would be experienced in assigning with accuracy a given nervous affection to a like cause. Without further remarks, I shall proceed to relate the following case:—

"On Saturday, November 6, 1858, I was consulted by Mary Scully, aged 34, a married woman, mother of seven children, and apparently in good health; she said the object of her visit was for advice about 'a fit' which she got, for the first time, fourteen days ago, and which had occurred again on the night previous to her visit. On inquiring particularly as to the exact nature of this 'fit,' I learned from her that, on the evening of Friday, October 22, she experienced a sensation of tingling and numbness in the little and ring finger of her right hand, and very quickly after the hand and arm fell powerless by her side. Soon after, she found the power of the right leg gone, and the mouth and right cheek dragged to the opposite side; she tried to speak, but could not remember words to express her thoughts; at last, after a little while, she became insensible, and remained in that condition for half an hour. These formidable symptoms then began to wear off, and next day she was as well as ever; the only thing that troubled her was an unpleasant feeling in her throat, as if there was—as she expressed it—'a piece of undone beef stuck in it.' She continued well until October 30, eight days after the attack; on this day she complained much of the unpleasantness in her throat, and at length, her stomach sickening, she threw up a lumbricus, which her husband measured, and found to be 10 inches in length. Nothing particular occurred for a week after, but at the end of this time she again experienced the same tingling and numbness as before in the fingers of the same hand; perfect paralysis again took place, but the insensibility in this—the second attack—lasted for an hour; again all the symptoms passed off, and when she visited me next day, the only thing she complained of was, slight weakness in the right hand and arm, and the unpleasant feeling in her throat. She was fully impressed with the notion that a piece of beef, of which she had lately partaken, was stuck in it. Save these two symptoms, I could not detect anything else wrong with her; her menses were regular, appetite tolerably good, bowels not disordered, appearance by no means indicative of hysteria; therefore, I naturally concluded that these attacks of temporary but complete hemiplegia were the result of irritation applied to peripheral branches of the eighth pair of nerves, and thence reflected to the nervous centres. Be this as it may, one thing is certain, that lumbrici, in the alimentary canal in an adult, often give rise to very formidable affections of the nervous system, and, as I before remarked, effects only are to be seen, the cause in many cases being hid. I ordered this woman turpentine in emulsion, to be followed by an oil and turpentine draught; she continued quite well until February 8, when she threw up a second lumbricus, not so long as the first, but nearly so; she has not since had any symptom to complain of. I have styled this case one of 'temporary hemiplegia,' and adduce it as one in which a correct prognosis was impossible; there were no indications before the attack of the presence of worms in the alimentary canal; the patient was not subject to them when a child; the hemiplegia was complete; the insensibility proved the implication of the brain; it was not spinal hemiplegia, certainly not hysterical; and I

therefore ask, to what cause could it be referred by a surgeon who was called in to treat the case before the lumbrici had been ejected?"

FEBRUARY 23, 1859.

PROFESSOR O'CONNOR, PRESIDENT, in the Chair.

DR. FINN communicated the following case, having previously introduced the subject of it (then convalescent) to the notice of the Society. On this occasion the several members who were present availed themselves of the opportunity thus afforded of observing the phenomena to be referred to.

Bronchitis; Emphysema of the Lungs; the Inspiratory and Expiratory Theories of Emphysema.—Denis Magrath, aged 50, a carpenter, was admitted into the North Infirmary on the 3rd January, labouring under bronchitis and emphysema of the lungs. He stated that he suffered, about five years ago, from an attack similar to the present, but more severe, and that, since that period, he has not been wholly free from cough, particularly during the winter season. The symptoms, on the occasion of his admission, were: severe cough, with very scanty expectoration. The pulse was not accelerated; tongue clean; appetite impaired; a disinclination to make use of animal food. The chest was preternaturally resonant, and the auscultatory signs were similar to those generally observed in emphysema of the lungs. The two lower thirds of the neck were so increased in volume from time to time, during respiration, as to suggest the existence of disease of the thyroid gland. This tumour, which was resonant on percussion, disappeared during inspiration, and returned during expiration, its volume being considerably augmented when the expiratory act was forcible. The jugular veins presented a permanent state of turgescence, but no refluent movement of the blood was observed to have occurred.

Remarks.—The respiratory phenomena above noticed are opposed to the conclusions arrived at by Dr. Gairdner relative to the mechanism of emphysema of the lungs. Dr. Gairdner[a] maintains that the *expiratory* act is mechanically incapable of producing distention of the lung, or any part of it, and refers this result to the exclusive agency of *inspiration*. In this instance the expiratory act developed at the lower part of the neck a tumour which almost wholly subsided during inspiration; and that the tumour in question consisted principally of lung tissue, the clear resonance referred to may be regarded as conclusive evidence. The limited superior-costal mobility appeared to mar the effect of the inspiratory movement, at least in the corresponding parts of the chest; whilst at the same time the angle at which the inspired air diverged towards the apices of the lungs probably exercised a concurrent influence in producing a similar result. The phenomena observed in this case are in accordance with the views of Dr. Jenner, who holds that the expiratory act is the cause of emphysema[b].

[a] Monthly Journal of Medical Science, July, 1851.
[b] Paper in the Medico-Chirurgical Transactions, vol. xl. 1857.

On the Employment of Alteratives in Acute Diseases. By Charles Higgins, M. D., Paris.

In the strict sense of the word most medicines might be called *alteratives*, but custom limits this term to a small number, of which I propose to speak. I consider the class of alteratives to be very important, and of great value, and I attribute the origin and progress on the Continent of the absurd system of homœopathy, partly to the neglect of their use. Patients whose state required the administration of these remedies received only gum-water at the hands of the disciples of Broussais, while the practitioners of the old school prescribed for them excessive doses of nauseous purgatives, ill suited to their habits; nothing could be better calculated to dispose them favourably towards a deceitful charlatanism, which promised to cure them with minute doses of medicines compounded with saccharine substances, so as to render them agreeable. This method, equally and more than the would-be doctrine, influenced the great majority of patients; for the most philosophical individual, indifferent as he may pretend to be, prefers to endeavour to cure himself by the administration of a saccharine globule, rather than with castor-oil or infusion of senna.

The physicians of our age are too much inclined to regard alteratives as applicable only in chronic, or at least apyrexial affections. Doubtless it is in such maladies that alterative medicines are chiefly indicated; but I am perfectly convinced that they are also most useful in certain acute diseases, when the inflammation is slow in resolving.

We possess medicines whose action influences the peristaltic movements of the intestines; others which act upon the skin; others on the kidneys; and others again upon the nervous and circulating systems; and it might be supposed that with such resources in our hands, we are sufficiently armed successfully to combat most diseases, at least those which are curable. This is almost universally the opinion throughout the Continent of Europe, and there are only a few chosen spirits who dissent from it.

Many individuals recover from inflammatory diseases and prolonged typhoid fevers, without having been treated with alteratives. But, notwithstanding this fact, I am strongly convinced that thousands of valuable lives might be preserved by the judicious administration of medicines of this class. If I am asked the *modus agendi* of these remedies, I confess my ignorance, and moreover, I believe that their precise mode of action will never be known. But their utility will appear incontestable to every unprejudiced mind. Let us suppose ourselves at the bedside of a patient affected with acute inflammation of one of the organs essential to life; he has lost as much blood as his constitution will admit of; contra-stimulant medicines have been given, and revulsive means have been employed in the form of blisters; the patient has been purged; he has taken diaphoretics and diuretics; he is better, much better than he was at the commencement of his illness, but infallible symptoms show

that the inflammatory condition is not wholly subdued. At this point of the disease, the immense majority of continental physicians determine to leave the cure, at least for the time, to nature, contenting themselves with prescribing perseverance in the use of emollients. This line of conduct I myself have often followed, and I would still follow it; but success depends entirely on the degree of inflammation which continues, combined with the influence which the morbid poison has exercised on the vital functions. The judgment of the physician is here called into play. If there is the least fear as to the ulterior resolution of the inflammatory state, the moment has arrived for the employment of alteratives; and their good effects will almost invariably be manifested after some days, not by evident action on the emunctories, but by insensible, though not less real effects. Lowering of the pulse, a gentle moisture of the skin, greater humidity of the tongue, evident improvement in the function of the affected organ, more rest, and an unmistakable feeling of relief on the part of the patient, bear testimony to the benefit derived from the treatment.

What then are the alteratives endowed with such advantages in the treatment of acute diseases? The two agents, *par excellence*, are mercury and antimony, substances which, if judiciously administered, will save the lives of thousands, as they have already done; and if some ignorant practitioners have abused mercury, that is no reason for proscribing that valuable medicine.

The fact is, that it is impossible properly to practise the art of medicine without using mercury as an alterative; the incredulity of many physicians in reference to this point is truly deplorable. I am convinced that numerous patients sink under typhoid fever, who might be saved by the use of alteratives. Take a case of fever of that description; with some gentle laxatives we have succeeded in keeping the bowels open; we subdue the cerebral excitement by the application of cooling lotions, and sometimes by full-length tepid baths; we keep up a slight revulsion on the extremities by the occasional application of sinapisms. In case of thoracic or abdominal complication we use, according to the degree of irritation, either emollient cataplasms, small local bleedings cautiously employed, or blisters. Nothwithstanding all these means, the fever continues, and although the functions of the intestine may be discharged, either spontaneously or with the aid of emollient enemas, the secretions discharged from the intestinal canal are far from natural; the colour of the matters is bad, their odour is offensive; the patient's strength will bear no more purgation. How then can we restore the normal state of the secretions? This can be effected only by the use of alteratives. Some physicians pay too little attention to the modifications presented by these secretions; but I have too often witnessed excellent results from the judicious employment of alteratives in inducing the return of their normal condition, not to be convinced of the great utility of this class of remedies.

The two alterative medicines capable of hastening the resolution

of acute diseases are, as I have already said, mercury and antimony, the former especially. When we reach the later stage of the disease, calomel ought to be administered in doses varying from 0·046 of a grain to half a grain (according to the age and condition of the patient), repeated every two, three, or four hours. If the calomel should tend to relax the bowels, this effect will be prevented by the addition of a minute quantity of opium, for example, of the watery extract. The slightest action of mercury on the salivary glands requires the immediate discontinuance of the remedy. Should the skin be dry, about equal doses of antimonial powder, or, better, of the preparation long known under the name of James' Powder[a], should be added to the calomel; such a combination will probably produce a gentle moisture. But the antimony must be omitted if the diaphoresis should be excessive, or if the depressing action of this agent should produce debilitating effects. It frequently happens, however, that calomel, given in alterative doses, manifests its salutary action spontaneously in an amelioration of the general state of the patient.

Antimony, which is a medicine more debilitating in its effects than many, ought not to be continued long as an alterative. I repeat "as an alterative," because, when it is given as a contra-stimulant, for example, in pneumonia, the duration of its administration must depend upon the resistance of the inflammation. In chronic affections certain preparations of antimony may also be given for a tolerably long time as alteratives. Such, for instance, is the combination known by the name of compound calomel pill, or Plummer's Pill[b]. At present I am speaking only of the use of this medicine in fevers or acute inflammations, after the most alarming symptoms have yielded to the action of depleting remedies, of purgatives and emollients; in a word, I am treating of its employment as an alterative.

Digitalis is likewise given by some practitioners as an alterative, in acute diseases, either alone or combined with calomel or antimony. But its well known action on the circulation induces me to attribute its salutary influence exclusively to its sedative effects.

I am acquainted with no alterative agents in which so much confidence may be placed, in the treatment of acute diseases, as in mercury and antimony. In this respect I would make an exception

[a] It is admitted by all English practitioners that the preparation called *James' Powder*, which is kept secret and sold at a high price, is much more efficacious than the *Pulvis antimonialis* of the British Pharmacopœias, or the white oxide of antimony of the French Codex. The diaphoretic effect of true James' Powder seldom fails, while the action of the two others is more uncertain.

Frequently English physicians, in prescribing James' Powder, designate it by the name of *Pulvis Jacobi*. This dash of erudition is to be regretted: "James" is equivalent to *Jacques* in French, and *Jacobus* in Latin; but in this particular case it is a proper name [surname?]; and Dr. James' fellow-countrymen ought to respect the name, particularly with a view to prevent mistakes in the compounding of medicines. —*Note du Rédacteur.*

[b] Plummer's Pill is composed of calomel and golden sulphuret of antimony, of each, one part; guaiacum in fine powder, two parts; treacle, two parts.

in favour of quina; but the opportunity for using the latter alterative is much more limited; it is not admissible so early. It is generally when all danger is past that the tonic power of quina produces excellent results, removes any tendency to remission or intermission, and restores the strength.

As a general rule, the administration of mercury and of antimony is indispensable to the treatment, at least to the cure of the majority of acute diseases. The time for their employment is usually later, but sometimes the same, as that for the adoption of depleting measures.

The obstinate prejudice which still exists against mercury, except as an antisyphilitic agent, is inconceivable; however, some of the most enlightened physicians are beginning to yield to instruction, as they now give ten times more mercury than they prescribed twenty years ago. The introduction of this powerful alterative into ordinary practice must be the work of time, for Fontenelle has said: "Truths are wedges which we must make enter by the large end."

How could fractional doses of calomel prove injurious? The thing is almost impossible. If the mucous membrane should not bear even these small doses, blue pill, the action of which is milder, might be substituted for them, or frictions with mercurial ointment might be employed.

Antimony, moreover, is an admirable medicine, which may be given either alone or combined with mercury. As a contra-stimulant in acute diseases, and on account of its diaphoretic qualities, it is often indicated. Suppose we have to treat an affection of the intestinal mucous membrane in an exhausted individual, we wish to produce diaphoresis without fatiguing this membrane, which is in an irritable state, and without subjecting the patient to the annoyance of drinking a large quantity of ptisans, give him a grain and a half or two grains of James' Powder, combined with half a grain or less of calomel, and you will generally cause a salutary determination to the skin. If, on account of the idiosyncrasy of the patient, we do not think it prudent to give the smallest dose of mercury, antimony alone will, generally speaking, have the desired effect. Experience has shown that its action is largely assisted by the addition of small quantities of calomel; the same thing has been observed with respect to the principal diuretics. It is almost superfluous to add that, if antimony administered as an alterative, and consequently in small doses, should give rise to diarrhœa, or even to a slight relaxation of the bowels, which, in an enfeebled patient, might be considered hurtful, its use should be immediately suspended or discontinued.

It is no exaggeration to say, that without mercury and antimony it would be difficult properly to treat the immense majority of pyrexial affections. We might even repeat, with respect to mercury, what was long since said of opium, that it is a gift of heaven. Its action is difficult to explain, for it is equally salutary in apparently opposite states. Thus, if there be hypersecretion of bile, calomel given in the dose of from two and a half to three grains,

which ought to be its maximum, will expel it from the intestines; while, if there be diminution of the biliary secretion, manifested by a whitish colour of the fæces, the same dose of the mercurial salt will restore the exhausted secretion. I do not mean to advise the administration of calomel alone as an aperient, for experience has shown me that this salt always acts more gently, and, at the same time, more efficaciously, when combined with rhubarb, scammony, or aloes. But the proof of the specific action of mercury, and of the necessity for its employment, is that these purgatives will rarely restore the biliary secretion to its normal state, without the addition of calomel or blue pill. When they alone are sufficient, it is almost always the indication of a vigorous constitution in the patient, and we know the efforts of which nature is capable. But in large cities like London or Paris, the spontaneous action of the system is seldom energetic enough, and often requires the assistance of art.

The use of mercury or antimony as alteratives in acute diseases is counter-indicated by the existence of ulcerations on the mucous membrane of the mouth. Before having recourse to these medicines, this complication should be removed by the use, for example, of chlorate of potash. We must not, however, carry this precaution too far, for if these ulcerations are attended with a decidedly bilious state, calomel or blue pill, mixed with one of the aperients already mentioned, would be most useful. They should then be given in a purgative dose, in order that they might be immediately eliminated, that is to say in a few hours, by a saline aperient, such as a solution of sulphate of magnesia, or of tartrate of potash and soda, or of lemonade of citrate of magnesia. Given in this manner, the action of mercury on the ulcerated membrane is very salutary, and tends to promote its cicatrization. If we omit the use of the liquid purgative, we cannot answer for the effects of the mineral agent on the salivary glands, and we may do more harm than good.

The influence of antimony on the salivary glands is much less energetic than that of mercury; nevertheless, it should be administered prudently, and with the same precautions. Certain idiosyncracies (although but few) can bear neither one nor other of these mineral substances, which should be regarded as another contra-indication. Even in the case I have supposed of latent contra-indication, the doses I have advised cannot lead to any permanent mischief, if the patient is attentively watched by his medical attendant, and if the use of the remedy is immediately suspended.

In such cases, alkaline waters, particularly those of Vichy, may be advantageously substituted in doses varying according to the age of the patient, and the tolerance of his stomach.

With regard to the doses of mercury and antimony which I have indicated as yielding the alterative effects of these agents, they are the result of long experience. These doses may vary from 0·046 grains to half a grain of calomel; for example, in larger doses it will purge, in smaller its effects will be imperceptible.

If alteratives are very useful in the treatment of acute diseases, it may be said that they are still more so in chronic affections, for their employment is more frequently indicated in this latter class. These agents constitute, in fact, the foundation of the treatment of chronic diseases, while in acute maladies they are, though valuable, only auxiliary remedies.

It would be foreign to the aim of this paper to enter into the details of all the chronic affections in which alteratives are indicated; I shall content myself with enumerating a few.

Functional derangements of the biliary and other secretions connected with the act of digestion are perhaps the ailments in which alteratives are most useful.

We constantly see such instances, where purgatives have relieved the patient, but have not restored his functions to their normal state. I here allude to cases where there is neither irritation nor congestion of the gastro-intestinal mucous membrane, nor of the parenchymatous organ, but simply a state of torpor, or at least a deviation from the normal state of the above secretions. Under these circumstances, local depletion or the employment of counter-irritation would be unadvisable and useless. Purgation having failed to effect a cure, the latter will be attained by the use of alteratives.

The best agents in such a state of things are mercury, antimony, alkaline waters, and bitter substances. The first two should be given together or separately, twice a day, in doses of a sixth of a grain of each (more or less, according to the effect). As a general rule, I consider blue pill to be preferable to calomel in chronic affections, because it is less apt to purge, except in the preparation above mentioned, where the calomel is combined with antimony, Plummer's pill. This latter combination is an admirable alterative in certain affections of the skin, but for the digestive secretions mercury is the agent *par excellence*, except in certain idiosyncrasies, where alkaline waters, particularly those of Vichy and of Carlsbad, are more strongly indicated. The sojourn at these places contributes to the useful alterative effects of the waters, because it involves change of air for the patient, and this in itself is a powerful modifier. When a patient can pass a season at the waters, the latter are often sufficient to effect a cure without recourse to mercury. But when the patient is treated at home, the employment of mercury at first, followed by the use of the waters, is generally necessary. The administration of mercury, as well as that of antimony, ought always to be carefully watched by the physician, because the use of these medicines must be suspended so soon as the slightest action on the gums or salivary glands is observed, to be subsequently resumed, however, whenever circumstances admit, of which the physician in attendance alone can judge.

The alterative action of these minerals is aided also by the simultaneous employment of other medicines, alkalies and alkaline waters, when the functions of the liver are impaired; bitter infu-

sions, if the gastro-intestinal mucous membrane is implicated; squill, and other diuretics, when the kidneys are concerned; and sarsaparilla, in cutaneous affections.

We constantly meet with patients whose abdominal functions, the biliary or urinary secretion, or both, are deranged, and who, through carelessness or dislike to medicine, do nothing to restore the normal state of these functions, preferring to trust to time for that. So long as these secretions are not much affected, the individuals continue to eat and drink almost as usual. Still they do not experience the feeling of comfort which follows the accomplishment of the normal function; their breath is often so repulsive that it is disagreeable to approach them. This state of things may be sometimes prolonged for a considerable period, but it is evident that such a condition is not compatible with a sound state of the body. The assimilation of the ingesta is vitiated; the biliary and urinary functions are deranged; and it is clear, that if things remain so for a certain time, the general condition of the body will be affected; the nutrition of the several organs will be modified; and, consequently, morbid deposits may take place in the tissues.

Apart from hereditary predisposition to phthisis, cancer, scrofula, &c., I have not the least doubt that these maladies are sometimes produced in consequence of prolonged neglect of the state of the assimilative functions; the remedy is easy; it is seldom necessary to throw in nauseous drugs. Reform has taken place in this as in many other points. Where purgation is indicated, pills containing the necessary substances may be silvered; and instead of the old abominable *black dose*, we now have the lemonade of citrate of magnesia, which, when well made, differs little in taste from ordinary lemonade, and is quite as efficacious as the old black bottle in removing from the intestines the vitiated secretions they may contain, and the mercury which had been administered some hours previously.

On alteratives in other than functional diseases.—If we cannot doubt the utility of the employment of alteratives in functional derangements of the secretions, neither can we deny their salutary action in numerous cases of chronic affections of the parenchymatous organs, and more especially those of the liver, that is to say, in hypertrophy of the organ, and in other alterations of its tissue. But, in some of these cases, mercury applied externally, and for a long time, in the form of a plaster, is often more judicious; this medicine is better borne, and is more efficacious when so applied than when given internally. This is easily understood. The absorbents of the stomach and duodenum being, of course, weakened by the organic change which has supervened in a viscus so near and so closely connected with these organs, our efforts to produce an internal action are often frustrated, and we are compelled to have recourse to cutaneous absorption.

I specify mercury as the principal and most important alterative, but iodine, opium, belladonna, antimony, sulphur, alkalies (these last in the form of plasters or baths), may be and are daily used

with unquestionable results. How many valuable lives might be saved, if physicians were consulted in time, and, above all, if their advice were followed! How many incipient diseases of the liver would be arrested, and cured by a judicious employment of alkaline mineral waters, such as those of Vichy and Carlsbad! And how many cases of phthisis would be checked in their course by the timely use of certain waters, such as those of Eaux-Bonnes, of Cauterets in the Pyrenees, and of Aix en Savoie!

We know that affections of the spleen are benefited chiefly by residence in a dry atmosphere, and by the preparations of bark. As to the kidneys, I am convinced that their diseases are generally secondary to those of the liver; cure the latter, and the former will disappear. I do not mean to say that Bright's disease, and some others, may not arise *per se;* but, in my opinion, the rule is as I have stated.

On Tumours and Indurations.—In the treatment of the several tumours and indurations of the areolar, fibrous, and other tissues, alteratives which excite the action of the absorbents are the agents the most necessary to the cure. However, medicines of this class are not always sufficient, unless they are assisted by what we may call natural alteratives, that is to say, a different atmosphere and different water from those the patient is accustomed to breathe and drink. The salutary impression produced upon the human economy by change of air is as certain as it is inexplicable. Nature has need of the assistance of art much more frequently than some people imagine. The chylopoietic viscera often become congested, and, whether that proceeds from a functional or organic modification of one or more of these organs, the state is one which no less demands the aid of alteratives.

Conclusions.—The ordinary term of life might be considerably prolonged, if man were more attentive to his regimen, less addicted to personal indulgence, and if he had recourse to the moderate use of alteratives so soon as his functions are found to be deranged.

No one is more opposed than I am to the frequent use of drugs, but there is an immense difference between their excess or abuse, and such a moderate employment of them as is necessary to restore the functions to their normal condition. By taking too much, we give rise to an injurious irritation, and perhaps to inflammation of the gastro-intestinal mucous membrane, or of some of the other abdominal organs. By not taking any, or, what comes to the same thing, by taking so-called homœopathic doses, we produce no effect, or rather we produce an unfavourable effect, in this point of view, that we lose valuable time if the disease is stronger than the *vis naturæ*, and if it gain ground.

Biliary derangement being by far the most common indisposition to which the human body is subject, in consequence of the indulgence of the stomach, no medicine has as yet been discovered which is at all comparable to mercury in its salutary action, and its immediate influence on the secretion of the liver. As I have already said, it expels the redundancy of bile, if the latter is evidently in excess; and it

excites the function of the liver when this secretion is deficient. Everything consists in the mode of administering it. As a purgative, this medicine (that is to say, calomel or blue pill) ought seldom to be given in larger doses than from a grain and a half to two and a half grains, and it should then be removed from the intestines, five or six hours subsequently, by a fluid saline, or other purgative. In this manner we need never fear the injurious effects of the absorption of mercury on the salivary glands. On the other hand, if the liver is chronically engorged, in consequence of neglect of hygienic rules, or from natural causes, mercury is then indicated in doses varying from a sixth of a grain to half a grain given internally, or in the external form of mercurial plasters or frictions. Nothing is easier than to watch the effects of this mode of using it, and subsequently to act according to the indications.

The prejudice which exists on the Continent against mercury has, I believe, done more harm than the drenching system of some of the lower grade of English practitioners has given rise to in an opposite direction.

Certain eccentric individuals, and others who would wish to depreciate the art of medicine, pretend that several eminent physicians have no faith in the Materia Medica. I cannot believe this, for an incredulous man cannot be eminent, at least in a scientific point of view. I do not require that one should believe in the numerous farragoes of drugs which are invented and extolled, but I maintain that it is impossible for any well-constituted mind not to credit the beneficial effects of quina, mercury, antimony, iodine, sulphur, alkalies, and several other medicines.

The direct action of mercury on the liver is too evident not to bring conviction to the minds of a great number of Continental physicians; these physicians are now opposed to this medicine (I regret to say it), simply in consequence of the prejudices of their medical education; but if they gave its use a fair trial, they would not fail to adopt it warmly. The majority of these practitioners believe in the influence of alkalies (the salts of soda and potash) on the functions of the liver; there they are perfectly right. But alkalies are applicable rather in engorgements and chronic indurations of the organ than in transitory derangements of the biliary secretion. Their action is feebler; in a word, they are admirable adjuvants of mercury, and may be administered for a much longer time, particularly because their influence on the salivary glands is rarely perceptible. The object of the physician is to cure his patient as rapidly as possible; in the immense majority of cases, mercury will accomplish this in a fourth of the time required to effect the same by means of alkaline medicines.

The number of men who die, in consequence of excess in eating and drinking, between the ages of 50 and 60, is considerable. I speak of those who eat and drink too much, without losing their intelligence, but who eat at least a third more than their organs are capable of digesting with facility, and who drink enough to give rise to an inflammatory state of the mucous membrane. They thus

weaken its function, by enormously increasing the labour of assimilation.

I do not address myself to those who do not possess sufficient courage or moral energy to diminish gradually, in proportion as they grow old, the quantity of food they eat, or of wine, or other alcoholic drinks which they are in the habit of taking; but I boldly proclaim to those who desire to live to seventy-five, eighty, or even ninety years, in place of fifty or sixty, that the means are, under God, in their own hands; and that those who are willing to content themselves with eating and drinking in moderation, and to have recourse to alterative medicines from time to time, and only when there shall be a decided indication to restore the biliary secretion to its normal state,—will find, I do not hesitate to say, their life prolonged by a score of years. It would be affectation to produce statistical tables to prove this; but the statistics of common sense will demonstrate its truth to each.

I repeat that moderation in the *ingesta*, although the principal means, is not sufficient. In spite of a regular life, the digestive functions, and especially the secretion of the liver, very frequently become deranged. If this state be neglected for a certain time, for weeks, months, or years, an engorgement or alteration of the tissues of the liver, spleen, pancreas, or kidneys will ensue, and carry off the patient, twenty or thirty years before the natural period.

To this advantage of prolonging life, the use of alteratives adds another, that of maintaining the harmony of the functions, and of continuing man longer in the enjoyment of legitimate pleasures. I think, however, that physicians in general ought to pay more attention than they do to prescribing medicines in an agreeable form. Many otherwise sensible people, in consequence of an invincible dislike to repulsive drugs, put themselves in the hands of globulist charlatans, hoping in this manner to obtain a cure on more easy terms. But, as I have already said, we may administer solid purgatives to these delicate people in the form of pills; fluid purgatives may, in general, be advantageously replaced by the citrate of magnesia, which, in solution and with syrup, constitutes a pleasant lemonade. With castor-oil we may prepare, if patients dislike taking it in milk, an emulsion with gum Arabic, and cinnamon, or peppermint water, which will be borne by most stomachs.

We cannot change bitters, for it is in the bitterness their virtues consist; but they do not excite the repugnance which is felt towards senna, rhubarb, and other drugs; and as to the two principal alteratives, mercury and antimony, they may be taken in pills, or in powder mixed with sugar, according to the patient's taste. In a word, I do not find the practice of medicine so very complicated as it is said to be; everything depends upon the first principles, and these principles are, to allow nature to act, and to assist her with alteratives when, as often occurs in civilized life, her own powers are insufficient.—*Bullétin Général de Thérapeutique*, February 28 and March 30, 1859, pp. 183, 280.

Case of Prostatic Calculi, and Obliteration of one Vas Deferens. By DR. FRIEDEL, Physician in the Royal Navy.

ON the 9th of December, 1856, Professor Virchow dissected the body of B., an upholsterer, aged 52, who had died after having been four days in the Charité Hospital. On examining the pelvic organs, extensive adhesions were found between the iliac flexure and the posterior wall of the bladder, which filled up the entire intervening space. The venous plexuses in this situation were extremely tortuous, and were all greatly dilated and loaded with dark blood. The left pudendal plexus was particularly distinguished by its great development. The two vesiculæ seminales were quite concealed by extensive formations of areolar tissue around that plexus, and at first both appeared to be turgid. On closer investigation it was seen that the right vesicula had undergone considerable relaxation and corrugation of its parietes, and was consequently completely collapsed. On section its walls appeared very much attenuated in comparison with those of the left vesicula; the areolar arrangement of their internal mucous surface had almost entirely vanished; their contents consisted of a thin, serous, scarcely viscid fluid, exhibiting under the microscope granular and epithelial elements, but no spermatozoa. The vas deferens, about half an inch above its opening into the vesicula, was swollen, forming a hardish, almost cartilaginous tumour, nearly as large as a bean, above which the vas was, in comparison with that of the other side, uniformly dilated. A fine probe could be passed through the caliber of the vessel only to the upper end of the tumour; neither could any continuation of the canal through the swelling be discovered with a small scissors, nor was any indication of it visible on longitudinal section of the tumour. It was only beneath the tumour that the canal was again recognisable and permeable, although very much contracted. Microscopic examination of the little tumour showed that it consisted of a very dense mass of connective tissue, with very numerous elastic fibres, and elongated, fusiform nuclei; and that it was surrounded by an hypertrophied layer of the muscular coat of the vas deferens. The ejaculatory duct was free, and of the ordinary capacity. On the left side the vesicula seminalis and vas deferens were normal, except that in the latter the various sized reticular lacunæ of the lower extremity were very beautifully developed.

The prostate gland, enlarged on the whole, was compact and hard to the touch, was not easily cut with a knife, and during section yielded a remarkably grating and scratching sound. As I suspected that this might be caused by the impaction of solid masses in the tissue of the gland, I subjected the secretion, collected from several surfaces of section, to microscopic examination. Numerous crystals were now discovered, which strongly refracted the light, and appeared in one place isolated; in another, in circular groups, intricately arranged around a centre; in another, again, in a fan shape, with their apices lying together. The separate crystals were in the form

of longish, sharply-pointed, four-sided pyramids. They were totally insoluble in alcohol and in water; but, on the contrary, dissolved with great facility both in vegetable and mineral acids, and in alkalies, leaving after their disappearance some slightly granular mucous flocculi. The addition of acid did not produce the evolution of gas. When oxalic acid was added after the disappearance of the crystalline masses, amorphous globular depositions of oxalate of lime immediately took place; so that these crystals probably consisted of phosphate of lime, which was also found to be the sole ingredient in the concretions just now to be mentioned.

With these purely crystalline formations were found, nearly in almost as great abundance, the well-known roundish, laminated bodies, from the first stages of their formation to the largest calculi hitherto observed, the largest being equal in size to a very large pea. The first traces of these concretions appeared in the form of very small, round, sharply-defined, gelatinous globules, of perfectly homogeneous quality, and with difficulty compressible, presenting neither striæ, membrane, nor any diversity of contents. It was only on pressure with the covering glass that a membranous envelope could be observed, in consequence of some of the corpuscles bursting or tearing from the edge, and giving exit to their thickish, coherent, mucous contents. Most of these corpuscles were circular, some were oblong, only a few were compressed into an angular shape, presenting a pyramidal appearance. Their colour was for the most part a light amber-yellow, seldom so faint as to render them invisible. From this lowest shade, without any decided stratification, all the other steps of their development could be traced. Thus we have an infinite number of layers, for the most part equal in extent, and not always equally distinct, throughout the entire circuit. Often in the larger of these layers the shades of colour are numerous, giving the appearance as if the lighter and somewhat obliterated strata were but one. In the latter, too, however, the lamination can be distinctly seen on accurately adjusting the focus. The larger the bodies are, the more irregular is their contour. We then find the oval ones often bulged out, compressed, or angular, the round ones frequently polygonal. In general, the layers first deposited crumble in the centre of the white gelatinous corpuscle. We therefore see, in the interior of the bodies, dark, crumbling contents, surrounded by a laminated shell. On the addition of caustic alkalies, the lamination of the envelope immediately disappears, and the latter changes into a homogeneous mass, while its contents remain unaltered. The corpuscle at the same time swells up, splits into irregularly radiating chinks, and lets the granular contents escape, or still partly encloses them. In some of the round and larger specimens of these bodies a slender radial fissure not unfrequently passes from the periphery to near the layer surrounding the debris in the interior. I never saw this touch or extend into the centre. This radiating striation depends on the deposition of salts of lime, as it destroys the former transparency of the layers, while the opacity is again removed by the

addition of hydrochloric acid, and the corpuscle is rendered once more clear. The smallest of these concretions are not visible to the naked eye; on the contrary, we can with the naked eye recognise the medium-sized ones by their great lustre under the covering-glass, and might easily confound them with very small transparent grains of sand. By this lustre they are at once distinguishable from the globular and larger agglomerations of crystals above mentioned, which appear as dull whitish-yellow points, and can be very easily isolated with the preparation needle.

Under the microscope these bodies did not exhibit characteristic reactions with chemical reagents. On the addition of a solution of iodine, some few assumed a dark brown colour, others again, particularly the larger and the smallest of all, remained unchanged and homogeneous. Concentrated acids appeared to act on them only by abstracting water; for the bodies then became slightly shrivelled, and their outer membranes presented a faintly wrinkled aspect. Only the above mentioned behaviour towards solutions of potash and soda, and, in those which were radiated and striated, towards hydrochloric acid, is to be noted. Now although these microscopic formations could not in their present state cause any great disturbance in the system, unless the enlargement of the gland containing them may be attributed to them, they might by their growth produce no inconsiderable annoyance and obstruction. It was not discovered whether the patient had suffered from derangement of the urinary organs. If such had been the case, an enlargement of the middle lobe of the prostate would probably have been suspected and diagnosed, or a stricture in the prostatic part of the urethra. Here there was considerable obstruction, but neither stricture in the proper sense of the term, nor hypertrophy of the middle lobe of the gland. The obstruction consisted, in fact, of four prostatic calculi lying on the left side behind one another at the side of the caput gallinaginis, and immediately under the reddened, inflamed, and deeply corroded mucous membrane of the urethra; thus, when the latter was divided, four bluish-red translucent points were seen, almost presenting an appearance as if small hemorrhagic masses lay under and elevated the mucous membrane. But the knife soon showed that these were hard, brown, shining, jagged calculi, completely enclosed by the glandular substance, and covered by the mucous membrane. The largest, equal in circumference to a large pea, lay next the bladder; under it was a second, as large as a lentil; and then two smaller of a light brown colour, and of the size of grains of mustard-seed, with uneven surfaces. All together weighed little more than a grain. They exhibited a laminated structure, and their fracture presented an amber-like lustre, but in the centre was a small cavity containing a grayish-white pulverulent substance. The layers were very distinctly marked; internally they were of a light brown colour; externally they were darker.

Fragments of the calculi were submitted to chemical examination. They dissolved at first with difficulty in cold dilute hydro-

chloric acid, but more easily with the aid of heat. On platina foil they blackened, but did not diminish in volume, neither did they diffuse any odour, melt, or deflagrate. The animal matter, whose presence was betrayed by the blackening effects of heat, was precipitated on the addition of alcohol to the clear solution as transparent gelatinous mucus, and the remainder of the mass proved to be phosphate of lime; consequently, the same substance of which the other crystalline masses were composed.

These stones were evidently only the higher, and, perhaps, highest stages of development of the numerous microscopic concretions, which, had the patient's life been prolonged, might have reached a similar state. More extensive disturbances might, under such circumstances, perhaps, have led to a fatal result, which in the present case was due to the occurrence of pneumonia.

That these stones were only such concretions, greatly enlarged, is seen from the laminated structure, the nature of their central contents, which depends much less upon alkaline change of the inorganic salts, &c., as has been supposed, than probably on simple, I might say necrotic, destruction of the primary gelatinous globule, after the formation around it of several scarcely permeable layers, as we find the same in very small microscopic corpuscles, with from six to ten layers. So soon as these are formed, the communication of the primary contents with the surrounding fluid is cut off; they consequently collapse and perish. A further advance towards the formation of stones from these originally soft concretions, consists in the gradual absorption of calcareous salts. The latter constituents will vary according as the secretion of the gland contains a predominance of oxalate, phosphate, or carbonate: then the opacity I have mentioned takes place in the many laminated bodies, the radiating striæ are formed, and the corpuscles become firmer and darker-coloured.

In this case the glandular secretion contained a predominance of phosphate of lime, as was evidenced by the crystalline formation which manifestly depended upon that salt; and accordingly, this constituent formed the great bulk of the larger stones; Wollaston found the same in similar stones; H. Meckel in oxalate and carbonate of lime.

Unfortunately, it could not be ascertained whether this change gave rise to any considerable suffering. It is, however, scarcely conceivable that this state should have had no effect upon the discharge of urine, as the inflammation and erosion of the urethral mucous membrane in the situation it occupied was sufficient to produce such a result. How the affection should have been diagnosed and treated it is not easy to say, nor does the investigation of these questions lie within the scope of the present paper.—*Virchow's Archiv*, Bd. 14, Heft 1 und 2, 1858, p. 193.

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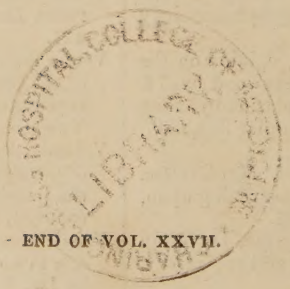

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